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FEBRUARY 1964

approach

THE NAVAL AVIATION SAFETY REVIEW

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TECHNOLOGY & SCIENCE

Pro flying--with Smitty and Riskit

Skill or luck--how do you vote?

I fell thirty feet to the watery depths

Coffee--how much is too much?

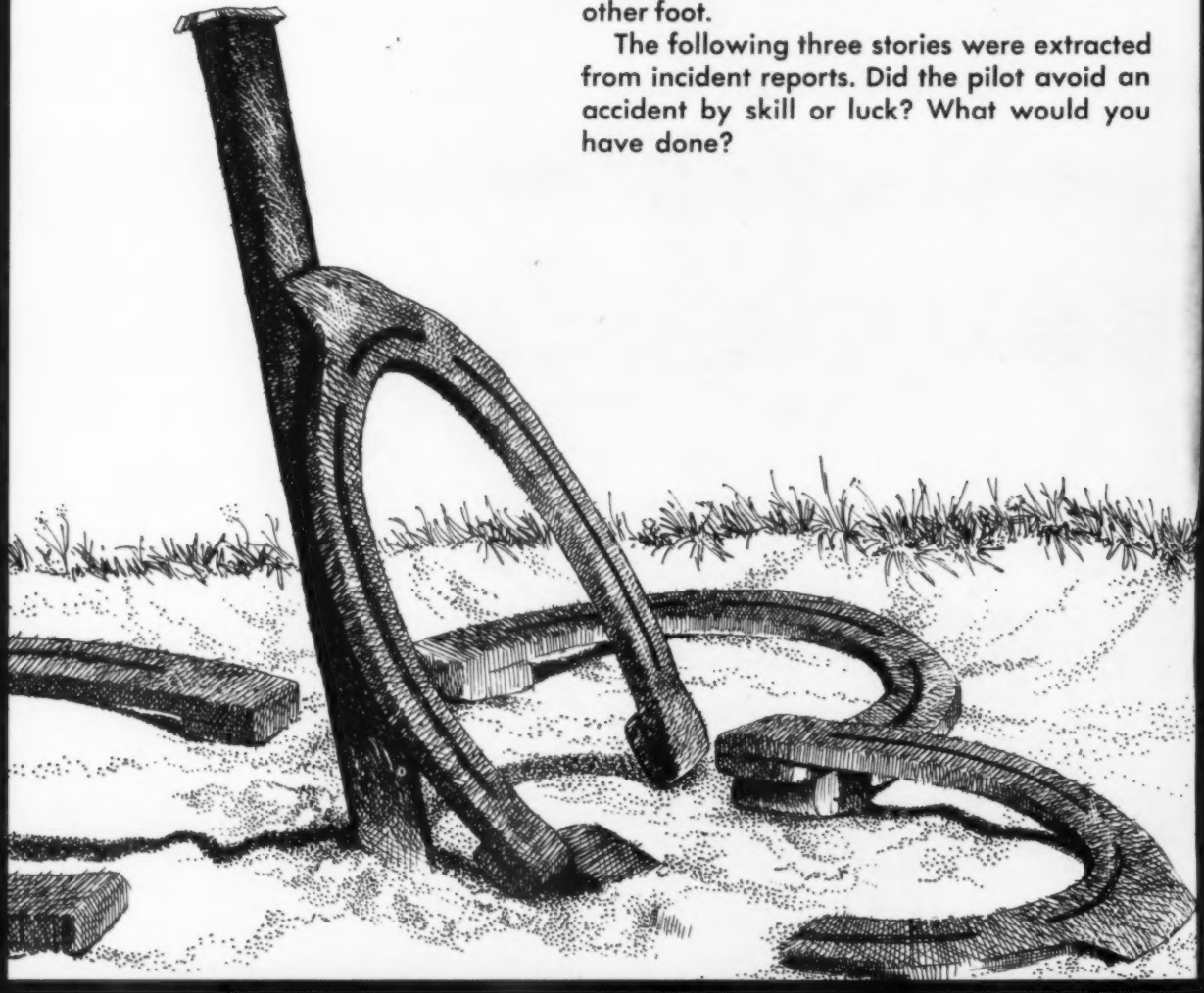
Icing in a hurry can be hairy

SPECIAL REPORT: 101 Maintenance Goofs
Who is responsible?

Skill or Luck?

In the great game of Monday morning quarterbacking, the conclusions, when discussing the big play, are usually limited to skill or luck. The same may be said when readyroom discussions of a recent aircraft accident or incident are held. The pilot handled it with skill or he was just plain lucky. It's easy to judge, after the fact, when you're secure in the comfort of your readyroom chair. When the chips are down and split second decisions are required to meet the situation the shoe swiftly switches to the other foot.

The following three stories were extracted from incident reports. Did the pilot avoid an accident by skill or luck? What would you have done?



HELO *on the* ROCKS

Skill or Luck

Some of the facts about this forlorn helo are quickly told, such as . . .

Who – Pilot was attempting to discharge passengers.

Where – From a low hover over an unprepared site on a ridgeline at 8600 feet.

When – Early afternoon in July.

What – Pilot experienced settling, regained hover, attempted waveoff from ridge. Settled again and touched down on a rocky area on the ridge.

The **Why** – of it is not so quickly spelled out.

According to the manual the aircraft should have been able to do the job. But the manual is not as precise as it might seem when helicopters are mixed with mountains.

The pilot was unused to high altitudes, having done most of his helo flying below 2000 feet MSL. However, he had been on this particular mountain operation two days and had experienced no

difficulties in landing or taking off at altitude. The winds had been steady, landing sites generally good with good approaches. There was little to indicate that mountain flying was as complicated and required the precision that the publications and stories led one to believe.

On the flight in question, the pilot was to take a three-man search team from base camp to a canyon area then proceed directly down to lower-level civilization and refuel. Fuel was down to 400 pounds but it was to be only a 15-minute trip.

"On takeoff," said the pilot, "the wind was approximately 10 to 15 knots blowing from the south straight up the canyon. The spot that the search party indicated did not look good enough to me so I circled the area for a satisfactory landing place.

"I found a place on the ridge line that looked pretty good and made a pass over the spot. It still looked OK. The ground was sloping slightly to the rear of where I was going to land. I made my approach directly into the wind and came to a hover with 2800 rpm and 41-42 inches of manifold pressure. After one passenger had gotten out the aircraft started to slowly settle so I added throttle and got approximately a half turn on the throttle before I hit the stops."

Nothing he tried seemed to help and after one small gain of altitude the helo commenced settling again. "At the last instant before settling to the ground," he said, "I pulled up on the collective which had no effect."

"Prior to takeoff I figured my weight and it was within limits for this situation. I had no trouble hovering initially for several seconds. One person had already gotten out which lightened the load that much more. Based on these facts it is my opinion that the wind either decreased appreciably or radically changed direction causing the incident."

Outside air temperature was 10 degrees C. and gross weight was 10,100 pounds. Handbook charts indicate the helo should have been able to hover *in* ground effect at the site (8600 ft.) even with no wind at a weight of 10,300 pounds. Any wind would have allowed a hover at higher weights.

However, at the point of intended hover the ground sloped down to the rear at about 25 degrees. This would cause the ground cushion to roll away from the aircraft to a certain extent and thereby nullify some of it. The overall effect would be to decrease the maximum weight at which the aircraft could hover at the site.

Maximum weight at which the aircraft could hover *out* of ground effect was about 9700 pounds, consequently the pilot needed all the ground effect he could get. But with a deterioration of ground effect and loaded as he was to near maximum, a successful hover depended on the wind. And apparently it let him down.

As the incident report noted, in mountainous terrain the wind at one location cannot be used to judge the wind at another location and elevation; even though nearby, with any degree of accuracy (there was no chance to use smoke grenades or flares for wind indication because of fire hazard.)

All flights in the operation were generally of short duration and the pilot, along with the others, had been briefed to lighten their aircraft as much as possible by leaving crew chiefs, tool boxes, and all unnecessary equipment on the ground. He may have reflected somewhat sadly that if he had gone ahead and done that, reducing the weight by about 240 pounds, he might have gotten away with it.

What Would YOU Do?

If you were Plane Commander of a C-1A and . . .
If you had on board a U.S. Senator plus two four-stripe passengers and . . .
If you lost one generator and . . .
If your destination is IFR and . . .
If you are in VFR conditions on an IFR flight plan . . .

Would you:

- **Keep quiet**
- **Keep going**
- **Notify traffic control of your deficiency**
- **Attempt to remain VFR, diverting to suitable VFR field if possible.**

For the actual results of one such situation see page seven.

Disquieting Nav Hop

Skill or Luck

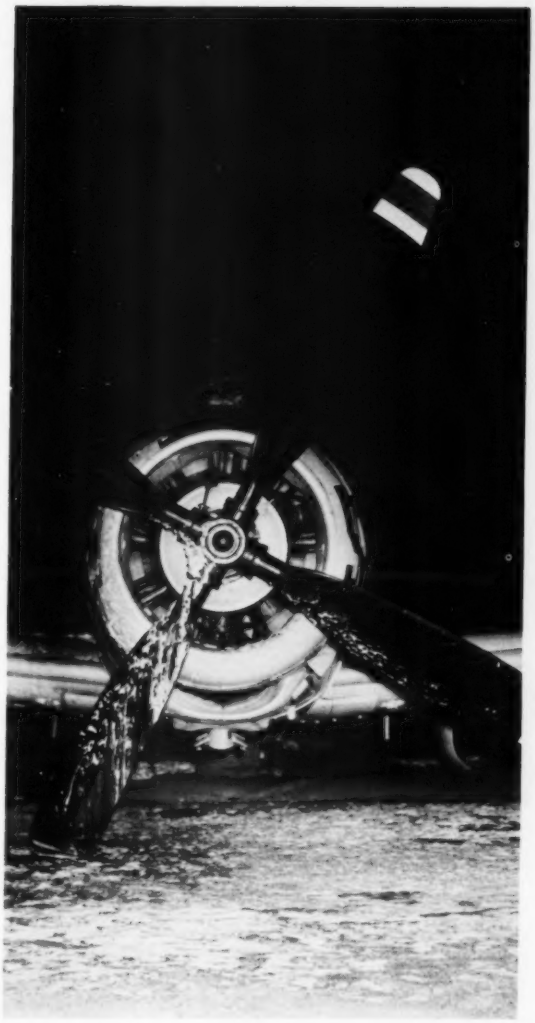
Towards the end of a night Nav hop under VFR conditions, the pilot of an A-1H had his engine quit without warning. He was ten miles from his destination but with plenty of altitude, 22,000 feet to be exact. Aileron boost was lost almost instantly.

"I had the lights of the base in sight," said the pilot, "and headed for it, deciding that if I couldn't restart the engine I would make an overhead approach to the field.

"Battery switch was shut off and I secured the Tacan, ARN-6, and radio altimeter. Then I shifted to low blower after retarding the throttle to the normal start position. The plane was very heavy on the controls due to loss of aileron boost and my attention was divided between flying the plane, holding my flashlight and working in the cockpit."

Several attempts to restart were unsuccessful and the pilot was unable to contact the tower, or lower his landing gear with the emergency system, because of a weak battery.

"I passed through a somewhat deep 90 degree position at 3500 feet," he said, "and feeling confident that I could make the runway I put the gear handle in the emergency down position. I turned the battery on and had external lights as I approached pattern altitude. Since I had received no acknowledgment of my transmissions I hoped my flashing lights would be noticed by the tower.



"With my nose pointed for the runway my speed built up to 140 knots and as I approached the end of the runway I turned the battery off. Over the end of the runway I began to flare taking care that I did not balloon. I did not know whether my gear was down or not. The last indication that I had noticed was barber poles.

"The plane settled below normal touchdown altitude and I let it continue. The contact with the runway was smooth, feeling like a 'greased on' landing. When the plane stopped, I stepped out and cleared the aircraft as the crash crews rolled up."

Skill or Luck

ICING INCIDENT

Light icing in clouds was predicted for the 6½ hour boat trip – but a PIREP led the PPC to believe he would be in the clear if he filed for 6000 feet. No turbulence was indicated. Seadrome weather for the night takeoff was 300 overcast, 1 to 2 miles visibility in light snow, freezing level on the deck.

Light rime icing was first noted between 500 to 600 feet on climbout. Heavier rime icing was seen about 2500 feet when a pre-briefed inspection was made from the beaching gear compartment using an Aldis lamp. Ice was forming on external stores carriers, floats and struts.

This was expected but weather conditions were not exactly as predicted. There was enough turbulence for the PPC to hold the crew in their seats. Power for normal climb was maintained along with normal climb speed of 130-135. Average rate of climb which resulted was 430 feet per minute.

Upon reaching the assigned altitude of 6000 feet the aircraft was still in thick soup. "I reduced power to 2300 rpm and 100 pounds torque pressure," said the pilot, "but this was insufficient to hold airspeed so torque was increased to 110 pounds. This appeared to hold it but was only temporary and shortly we had to increase to 2600 rpm and 125 pounds torque to hold 130 knots.

"Shortly afterward," continued the pilot, "the plane captain reported that one pair of prop-deicer blankets was out. At this time it was taking nearly climb power to hold 6000 feet and I decided to return home."

The aircraft had been airborne approximately 20 minutes.

It is considered that the pilot was not then fully aware of the extent to which ice had accumulated on his aircraft. Although he was an experienced second-tour seaplane pilot, he had had no recent experience in icing conditions of this nature and failed to correctly evaluate the excessive power required.

Several thousand pounds of fuel were dumped, enough the pilot felt, to be fairly comfortable for landing. He did not jettison more fuel since he also felt he might have to hold or proceed to an alternate.

Weather had lifted to 400 feet and 2 miles but minimum for the duty sealane was 600 feet. "I anticipated a little more airspeed on landing to compensate for ice weight," he said.

"On final approach I slowed to about 120 knots with 30 degrees flaps and let down maintaining recommended altitudes as given by ASR. We broke out at about 500 feet and quite a bit to the right of the sealane. I nosed over a little and made an S-turn to line up and lose some altitude. At about 250 feet I commenced to set up for a night landing slowing from about 100 knots to 90-95, adjusting descent with power to obtain 200 feet a minute." Apparently this was around 82 pounds torque pressure.

Somewhere in this activity the pilot's intent to compensate for the effect of ice was mislaid, as evidenced by the copilot's statement. "All the way down, until established in our night landing altitude, we kept an additional 10 knots of airspeed."

NATOPS recommends 85-90 knots depending

There was hard impact with the water in a slight right wing down attitude.

on gross weight for normal night landings and as the aircraft was heavy, you may be able to forecast what happened when the copilot said, "The last set of readings I gave the pilot were, altitude 50 feet, rate of descent 250 feet per minute, airspeed 92 knots." It is probable this airspeed was decreasing since props were run to 2900 rpm at 100 feet altitude which decreased available thrust.

Immediately after the aircraft passed 50 feet altitude the right wing dropped (2700 pounds of fuel in the right bomb bay tank). Simultaneously with the application of corrective port aileron the aircraft dropped. There was hard impact with the water in a slight right wing down attitude and the boat bounced, became airborne for a few seconds, then settled back in a level attitude. Total flight time was 40 minutes.

Structural damage was found in the beaching gear compartment but there were no leaks. Several internal members were torn and hull skin was "dished in" and wrinkled.

"Once on the water," said the copilot, "we could get a good visual check. Everywhere we could see there was ice. After we made the buoy the beach crew reported that chunks of ice were coming off the tips of the wings."

"Ice was about 3 to 4 inches thick in spots," said the plain captain, "and on ramping (45 minutes later) there were still big pieces on the aircraft."

In brief, airspeed on final approach was insufficient and the aircraft stalled. There is one consideration which might have made the difference between damage and a hard but uneventful landing. Touchdown was hard though the majority of the crew stated they had experienced harder landings. It is possible that ice could have built up on the bottom of the hull where the damage occurred. This accumulation could have started during climbout.

At low gross weights, climbing at 130-135 IAS would normally be sufficient to keep the angle of attack low to prevent underwing and hull bottom icing. It was felt that for gross weights in excess of 72,000 pounds 140-145 knots would be optimum while transiting moderate to heavy icing areas in order to retard underwing and hull bottom icing.

What Do You Mean

'LOW STATE'

This Frequently Used Term Can Mean Different Things To Different People

In the aftermath of a recent accident, the organization concerned made an extensive research of available publications and "failed to find a definition of 'low state'."

Immediate response from most tigers will be: "Baloney! Everybody knows what 'low state' means."

But scratch a little deeper. For shore operations especially, are you *sure* the term conveys the meaning you want:

- To an air station tower
- To GCA
- At an air force base
- At a civil airport

Is *low state* an emergency, subject to alerting the crash crew? Does illumination of the low fuel warning light form the basis for a low state transmission? Obviously these conditions are unrealistic if used as a rigid rule. Yet in the absence of a definition *low state* can be merely a "state of mind," subject to interpretation each time it is spoken in the air and received on the ground.

What is needed is something that will give pilots and controllers a mutual understanding of the situation. Call it a philosophy of operation if you want.

The Air Force has also been enmeshed in the situation and has come up with the term "minimum fuel." This originated as a means of informing the control tower that a jet entering a landing pattern was low on fuel, but not to the extent requiring emergency action.

In 1956 a few details were added. "Jet pilots normally will enter the traffic pattern with enough fuel to insure normal landing sequence with other aircraft." This amounts to the USN policy of having, for example, 1000 pounds at the break. For USAF pilots, when this fuel supply for a normal landing traffic entry is reduced by one-third, they are at 'minimum fuel.' The tower will give special (not priority) treatment.

By 1962 a plain language interpretation said: "When the pilot of a jet aircraft declares 'minimum fuel' status, the controller knows that any undue delay in handling the flight can result in an emergency. Normally this does not require the discontinuance of other approaches or landings. However, landing priority is provided if a traffic confliction exists or is anticipated. The controller is not required to alert fire and crash personnel."

While the above discussion may not be valid for USN/USMC use, it is an example which gives pilots and controllers some common knowledge of the circumstances.

The problem has come up before. A safety council report issued by Kaneohe Bay in 1961 gave the Group Safety Officer the task of preparing an SOP for declaring "low fuel" and "minimum fuel" emergencies (no copy of the results are available).

Early last year a revised Air Operations Manual for a USMC air station included a bit of *low state* procedure under "Emergency Procedures" and said: "The term low fuel state, used in connection with an emergency radio call, indicates that a landing must be accomplished without a waveoff. The term 'minimum fuel', used after a waveoff, indicates the flight cannot re-enter normal traffic, and must be cleared to enter the downwind leg for immediate landing."

This does not leave any room for a pilot who is reluctant to use the word "emergency" in conjunction with low state since "emergency" in some towers is the signal to rouse out the crash crew.

It would seem that *low state* itself should be able to indicate the actual situation and consequent treatment.

But back to a more specific thing – a definition. Out of the accident previously mentioned there came one recommendation which can serve as a starting point for discussion: "It is recommended that a 'fuel state' of 15 minutes in the vicinity of an airport be cause for declaration of 'low state'."

Any other opinions?

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WHAT WOULD YOU DO?

One hour and a quarter after takeoff, the port generator on a C-1A became inoperative. The aircraft was cruising at 9000 feet in VFR conditions on an IFR flight plan. Destination was approximately two hours away with enroute weather deteriorating from broken cover to an undercast with buildups.

The pilot secured the ARC-2 transceiver, tacan, omni, and the auto pilot to reduce the load on the starboard generator. Neither pilot considered the loss of one generator an emergency. No ground station was notified and they continued on with their original flight plan. Sometime later the pilot turned the auto pilot and tacan back on. No circuit breakers were pulled, no equipment was shut off by the copilot.

Neither pilot specifically monitored the ampere reading of the starboard generator. Approaching the destination broken and heavy cloud conditions with rain showers were encountered. Icing conditions required intermittent use of wing boots and prop de-icers. From best information available, the maximum amperage load on the starboard generator varied between 179 and 355 amperes.

The aircraft was held about 10 minutes 30 miles from the tacan then cleared for an approach. Weather was given as 1000 broken, 2500 overcast, one mile visibility in rain and fog.

At the 9-mile gate, with 2500 feet altitude, a complete loss of communications and electrical power occurred. Cause was failure of the starboard generator. The right voltage regulator was so hot the plane captain said he could not touch it.

The pilot executed missed approach procedures on needle, ball, and airspeed. He turned in a direction to clear local airways and mountainous terrain and climbed, hoping to break out between layers or on top. However, there was continuous instrument conditions to 11,500 feet and the pilot leveled off since he was getting intermittent rime ice.

No parachutes were on board. When it was determined that the aircraft was clear of all mountains a descent to 6500 feet was made. Approximately 45 minutes after the total electrical failure a fairly large hole was spotted with a valley and river below. It was possible to gain contact with the ground but low clouds and poor visibility prevented the pilot from continuing down the valley. With night approaching and fuel diminishing, a wheels-up landing was accomplished. There were no personnel injuries.

Right away the post-mortems began. All criticised the pilot's decision to press on into IFR conditions when the port generator failed. However, because of the design of the generator to operate continuously at 300-amp output and the relatively low electrical load normally on the system, a loss of one generator was not in the past classed as undue cause for concern.

Local action of the operating command was to put into effect a procedure for future situations in the C-1A:

- **Set failed generator switch OFF.**
- Reduce electrical load on operative generator.
- Switch to standby invertor.
- If in icing conditions, take immediate steps to leave those conditions (high current load required for prop de-icing).
- Advise nearest ground controlling activity of difficulty and request weather at airfields in the vicinity.
- If VFR, remain VFR and land at nearest suitable airfield.
- If IFR, land at nearest suitable airfield making your intentions known to ATC.

With complete electrical failure in IFR conditions, pilot spotted hole and put his C-1A to roost in riverbed.

'Come Fishing With Me'

By Col Gruger L. Bright,
Commander,
Marine Helicopter Group 36

The culmination of a successful fishing trip, the reeling in of a wet, sparkling, and twisting trophy is a great satisfaction. The taking of the trophy is the result of patience, concentration, good equipment, knowledge of how to use that equipment, knowledge of the natural laws, and the ability to use the principles of those laws.

Now let's shift the scene around a bit and come up with an analogous setting. This new setting takes place in an open area with nothing to be seen but sky and water. The fisherman, a helicopter pilot, has his rod, a UH-34D; his reel, the hoist; and the rescue seat or horse collar sling. The fish, a downed pilot, is waiting to be reeled in.

Many articles and manuals have been written on the subjects of search, survival, and rescue. They contain the necessary knowledge and the recommended methods of accomplishing each of those tasks. Perusal by all hands, including helicopter pilots, is of great benefit. In this bit of writing, I'd like to show you that my type of fishing has attendant problems just as game fishing has problems also. In game fishing, if the problems are not surmounted, the fisherman loses. In my kind of fishing, the fish stands to lose.

After the downed pilot is located, the helo pilot must bring all his concentration, knowledge, and ability into use. Wind is very important. The wind direction will determine from which direction the approach to the pick-up will be made. A smoke flare set off by the downed pilot will be helpful and appreciated. The helo can then make a low slow approach into the wind and a pass over the downed pilot. During this pass, power requirements, relative speed of closure, condition of the downed pilot (incapacitated, in raft, chute still attached, etc.), and the sea state must be noted. As the helo passes over the downed pilot, maximum power is used to climb so that the margin of excess power available can be determined.

If the downed pilot is incapacitated or has no smoke flares, the helo must drop a smoke flare, roll of GI paper, or something to indicate the wind direction. In many instances, being into the wind can be the margin ensuring the success of the rescue; while being out of the wind can put the helo with its crew in the water also. The relative speed of closure versus the air speed and power used indicates to the helo pilot the amount the wind will tend to push the hovering helo away from the downed pilot. The pilot's condition will indicate the necessity for the crew chief to enter the water to render assistance. The sea state affects the stability of the hover by varying the ground effect.

As the helo comes around, the pilot is assimilating what was observed on the low pass and planning the approach and pick-up. As the helo comes to a hover, the hoist with seat or sling will be lowered. Don't touch the sling or seat until they are in the water. Like man, it's shocking, if the static electricity charge isn't dissipated first. The pilot will drag the seat or sling up to the downed pilot.

While the downed pilot is getting into the sling or the seat, a steady hover must be maintained to prevent the sling or seat from being pulled from the downed pilot's grasp. This is the time the pilot must concentrate and use all of his ability. He must depend on the co-pilot to monitor the cockpit and the instruments and the crew chief to advise him of the downed pilot's condition and position. This demands close teamwork. This is also the time when the helo pilot is most susceptible to an almost hypnotic concentration on the downed pilot which narrows his frame of reference and in the extreme can lead to disorientation. The alertness of the co-pilot can counter this tendency.

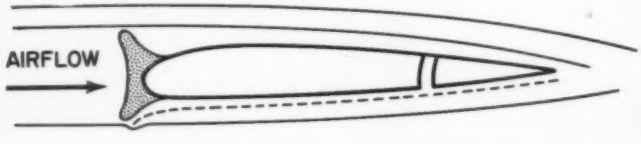
During the pick-up phase, any distraction breaks the helo pilot's concentration and jeopardizes the success of the rescue. The most commonly encountered ones are: radio transmissions requesting information on the pilot's condition, usually from circling buddies; low flying aircraft rubber-necking the action; and the physiological effects the demanding situation has on the helo pilot. If the downed pilot is incapacitated, an urgency affects the whole crew. Darkness or the loss of depth perception caused by a glassy sea add to the load placed on the helo pilot. A gentle but firm hand on the controls prevents over controlling which will prolong the rescue. As the downed pilot is hoisted up to the aircraft, care must be taken that he is not jolted from the seat or dropped back into the water and lost.

Now fishing isn't one of the major missions of MAG-36, but, our pilots have the motivation, knowledge, and ability to do this kind of fishing. We stand ready for any call for aid. We take a great deal of pride in our successful fishing trips. Knowledge and understanding of all the complexities ensure success and satisfaction.

TAILPLANE ICING

After some incidents which occurred in icing conditions, experimental investigations have been made in the United Kingdom, the U. S. A. and the U. S. S. R., into the effect of ice formations on the tailplane leading edge. It is known that in extreme cases such formations can lead to difficulties in control.

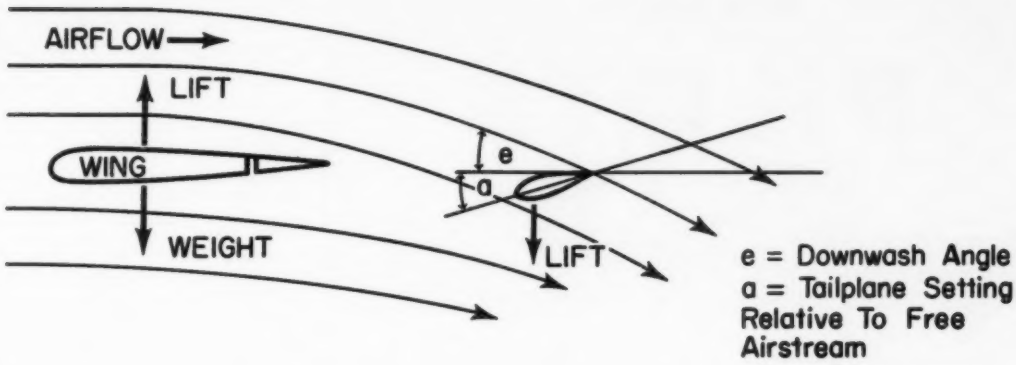
The serious cases occur with a sharp "horn" shaped ice formation (see diagram) – the shape is more important than the amount – which causes separation of the flow on the underside of the tailplane; this alters the pressure distribution and therefore the aerodynamic forces acting on the elevator.



Whether such separations will occur or not will be determined by many factors, such as speed, local angle of attack of the airflow at the tailpipe and the precise nature of the ice formation – which cannot of course be predicted.

The angle of attack at the tailplane is the sum of the setting of the tailplane relative to the free air stream, and the deflection of the free air stream due to the lift generated by the wings; this is termed the downwash.

The diagram shows that the tailplane setting relative to the free air stream is normally negative (nose-down) and this angle increases with increasing nose-down aircraft incidence i.e., with increasing forward speed or with lighter weight. The downwash angle depends on the lift dis-



tribution along the wing and, in particular, will increase as flaps are progressively lowered.

Flap lowering also causes a rearward movement of the point through which the lift may be said to act on the wing, so that a higher downward load is required on the tailplane to prevent the nose from dropping and this is provided to a greater or lesser extent by the increase of downwash.

Flow separation on the lower surface as a result of leading edge ice will do two things:

- it may cause the elevator to be pulled down
- it will cause more *up* elevator movement to be needed to compensate for the decay in tailplane lift.

These two effects combine to produce a pull force which may reach a very high value in a badly iced up condition, and in an extreme case – say, after increasing the flap angle – it may be impossible to recover control without loss of altitude and considerable effort.

An investigation has been made concerning a reported airline incident where, on lowering the flap to the final approach setting, an aircraft developed a nose-down attitude which required considerable manual effort to overcome. After some subsequent difficulty in maintaining the desired approach attitude, the pilot was able to continue the approach and accomplish a safe landing. It is worth noting that the final approach flap selection had been made at the maximum permitted airspeed for that setting.

External inspection of the aircraft immediately after landing revealed the described horn-type ice formation along the tail surface leading edge, the fin and the outboard sections of the main-planes.

The amount of ice understandably surprised the pilot – for the following reasons:

- the sector concerned was only 18 minutes duration
- the cloud layer at departure and destination airfield was relatively thin (3000 feet or so) and well defined, affording good contact conditions below its base and clear air conditions 'on top' during the cruise phase of the flight
- the pilots had inspected the wing leading edges at the top-of-climb and established an ice-free condition.

While power-plant anti-icing had been in use throughout flight and windscreen heaters also in continuous use (and switched to HIGH during descent) the leading edge anti-icing system was not used for the very simple reason that it was considered unnecessary.

Conclusion

Ice can form extremely quickly and, in the case of the tailplane, it could reach hazardous proportions in the approach phase without any prior evidence of its presence in the clean configuration.

Where the use of aircraft anti-icing systems is concerned there is ample worldwide evidence of the fact that pilots tend to rely on personal judgment. It must now be emphasized that the pilot cannot always be aware of the presence of ice on his aircraft – especially the tailplane – not to mention the fact that the shape of any accrued ice will be only one of an infinite variety.

The moral, therefore, is simply this:
In the interests of flight safety pilots should make the fullest use of all available anti-icing systems whenever ice is present or likely to be encountered even for a short time. Modern anti-icing systems are extremely effective and, when properly used, will prevent the ice formation described in this note.—*"Flight Safety Focus"*

ALL PILOTS READ

Copilot or Sandbag

PILOT ERROR! The accident investigation board finds the primary cause of the accident to be pilot error in that the PPC allowed the aircraft to get into an uncontrollable condition., But what was the copilot doing all this time?

Too frequently young copilots are reluctant to notify the PPC when his airspeed, altitude, angle of bank, or other flight conditions deviate excessively. Why should this be? Is it because the PPC may consider it as a challenge of his authority? Let's hope not, for the copilot is only showing a very natural concern for the longevity of everyone involved. If the PPC is the type that resents any questioning of his procedures, he is not the man for the job. Isn't the copilot capable of recognizing a dangerous flight condition? Certainly he is. If not, he is in the wrong job.

There are two prime reasons for this reluctance: (1) the copilot feels he is nothing more than a sandbagger along for the ride but not important to the flight, and (2) the checkout programs have not placed sufficient emphasis on copilot duties as safety observers during all phases of flight.

It isn't enough that the copilot know all the emergency procedures and standard operating procedures, he must be given the benefit of instruction in the many intangibles of safety that the more experienced pilots have learned but which may occasionally slip by them. He must be made aware of his responsibility to be alert for situations that have accident potential.

The copilot who finds himself slipping into the depths of low self-esteem will do well to do some reevaluating. He will find much in his job to justify pride, and he will find that he is not just a sandbagger; he is number two in a big business; he is executive vice-president in charge of safety of a multi-million dollar organization. It is a big job. It requires an intelligent, capable and responsible individual.

—VP-23 Safety Bulletin

Beep, Beep, Gulp, Pow!

MID-AIR COLLISIONS are accidents that can happen to better fliers than man. Birds sometimes don't look where they're flying and smash into each other; in collisions eyewitnessed by birdwatchers, the fatality rate was always at least 50 and frequently 100 percent.

More surprising is the fact that bats also collide fatally, despite their highly-reputed "radar" for detecting obstacles. This unexpected occurrence is traced by one bat authority to a flaw in their radar – actually, sonar echo-locating-system. Emitting about 50 throat-beeps per second in the 50,000 cycle hypersonic range as they fly with mouths open, they have to shut down the system momentarily when they snatch an insect. Therefore, two bats with their mouths full of food at the same time are both flying blind and might well blunder into each other.—*"Hotline"*

Ditching Tip

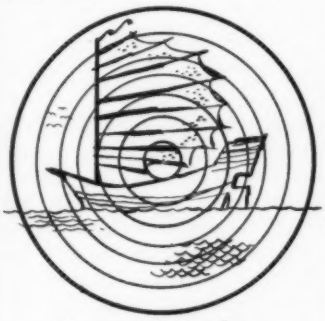
An airline captain flying the European area offers a ditching suggestion:

"A large number of aircraft these days carry some form of weather radar which also can be used for mapping. Soon after being introduced to this equipment, I noticed with interest the surprising number of vessels in the English Channel. In reasonably clear weather it was an amusing pastime to try and pick out visually the craft which were shown on the radar screen. Quite often it was not possible to see them.

"It then occurred to me what a useful service this little radar might provide in the event of a ditching, particularly under instrument flight conditions or in the dark. Even limited attention might enable one to establish a track toward a vessel which, in

all probability, could later be seen visually.

"The chances of survival could be increased if a ditching could be effected within sight of a surface vessel. I decided then and there that my weather radar would always be on (or at standby) whenever I was over water."—*FSF*



Unusual Attitudes

RECOVERY from unusual attitudes is an essential part of pilot training and should be accomplished in dual control aircraft with a qualified safety pilot in the front seat.

Unusual attitude recovery practice by a hooded pilot in a single seat aircraft is usually not realistic because the pilot is aware of how he entered the maneuver and therefore what action on his part will produce level flight.

If the single seat pilot closed his eyes, canted his head and deliberately tried to disorient himself, he could well enter flight conditions from which even unhooded recovery would be marginal. This portion of instrument flight training will not be performed in single control aircraft of this command.—*From an AAR endorsement*

Command Attention

Here's one culled from CAG's endorsement to an S-2 ramp strike.

". . . It should be pointed out in all fairness that while adequate FMLP training time was available in the 3-month period preceding this accident, during the preceding 30-day period the weather at . . . . . ., severely restricted FMLP training. Command attention has been directed to this matter. . . ."

And did the weather improve?
–Ed.

The Last Bray

Recently a commander filed a flight plan from NAS Whidbey to Alameda. The ODO, a young lieutenant, noticed the pilot had filed in a *Beechcraft*.

As the commander turned to leave, the lieutenant chuckled, "Take it easy, commander. We don't want any sonic boom reports on you."

Deadpan, the commander turned, finished folding his flight plan, tucked it in his flight suit. "Do you know why they don't send donkeys to college?" he asked.

The lieutenant shook his head mutely, stunned by this unexpected comeback.

The commander smiled sarcastically, leaned over confidentially, and said, "Because we have enough wise asses now."

The young lieutenant was still sputtering ten minutes later when the *Beechcraft* took off.

Probable Cause

Most of you will remember the recent crash of a commercial Connie *on the West Coast. Nine people lost their lives—five in the aircraft and four in private residences. The USAF Flight Safety Officer Study Kit makes the following note in regard to this accident because of one probable cause factor that could crop up again elsewhere.*

The aircraft was making an ILS approach with ASR backup when it lost altitude control a short time after passing the outer marker inbound. The plane collided with the ground in a residential-industrial area. Fire and impact accounted for the four fatalities to local inhabitants.

Preliminary investigation revealed that there was no evidence of failure of any structural components prior to impact. All engines were estimated to be capable of normal operations prior to the actual crash and maintenance-wise, there was no evidence of anything wrong in the records. According to the log books, the *Connie* was airworthy. Further, as of this writing, the physical condition of the crew did not indicate the area of human factors as suspect.

Here then, was quite a puzzler. Weather should not have been a factor for although the ceiling was about 500 feet and visibility one mile, the aircraft was in the clear. The captain was completely familiar with the airport as was the copilot. All radio contacts had indicated normal operations throughout the flight. Obviously there was a reason for the crash, but pinpointing one so obscure was no easy task.

Now we get to a situation that could be duplicated almost anywhere else: It seems that a new street had recently been completed that ran almost directly under and parallel with the centerline of the ILS. On the night of the accident the street lights were illuminated for the *first time*. Get the picture?

How could this accid

THE PILOT and bombardier/navigator of an A-5 were catapulted from the ship at 1942 for a night RBS and practice CCA hop. At 2115 the ship diverted another A-5 to the beach because of an engine failure and assigned the subject A-5 as escort. Due to identification difficulties, and the respective locations of the two aircraft at the time divert was ordered, a rendezvous was not accomplished. However, continuous communications were maintained throughout the flight and when the ailing A-5 was in the vicinity of the divert field, the subject A-5 reversed course for the ship in order to make the scheduled 2230 recovery. An on-deck report was received from the sick bird for relay to the ship.

At 2230 enroute descent and approach to the ship was commenced. At 1.5 miles fuel state was 6,500 lbs, the aircraft was on speed and essentially on centerline and glide path. The approach continued in a steady, well controlled fashion until three seconds from the ramp. Close in the "ball" started to go low. The LSO said, "Don't go any lower." The pilot stated, "I tried to stop it with back stick. I added insufficient power, the airplane struck the ramp. The airplane continued up the deck rolling over the wires. I added power, the airplane responded satisfactorily in every way.

"The impact of striking the ramp did not transmit any unusual forces through the pilot's seat. I felt a solid jolt to the airplane but my head did not snap nor was there any other unusual force to my body."

A second approach was waved off for a foul deck and the pilot was instructed to fly down the port side of the ship in order that the airplane could be inspected with the aid of an Aldis lamp. No serious damage was noted; the arresting hook, main landing gear struts, wheels and tires appeared undamaged. The air officer, his assistant and the squadron skipper unanimously agreed that the airplane could be recovered in the barricade.

Four passes were made during

ident have been prevented?

which time the ship rigged the barricade. The pilot commenced his final approach at 2304 with 3,500 lbs of fuel remaining. The approach was on speed and glide path until 12 seconds from the ramp where the A-5 settled to a "low and slow." The LSO transmitted corrective signals to which the pilot responded and the airplane touched down in the vicinity of number one cross-deck pendant and engaged the barricade essentially on centerline with all the wheels on deck. The barricade engagement and run-out appeared normal. The airplane came to rest approximately four feet left of centerline.

The damage incurred when the aircraft struck the ramp consisted of three large cracks in the airframe in the vicinity of the main landing gear, numerous rivets and two hexhead bolts failed, which attach the main landing gear vertical fitting to the 556 canted bulkhead. There were several other cracks and much wrinkled and buckled skin. Further damage was incurred from the barricade engagement, enough so as to cause the decision to offload the bird so an O&R inspection team could determine the feasibility of repair.

SIGNIFICANT COMMENTS

The pilot was considered well qualified in the A-5, having accumulated over 260 hours in type and participated in the A-5 BIS trials at NATC, Patuxent River.

During an interview, the pilot stated that he had six hours of sleep the previous night and had eaten all three meals the day of the accident. He had been in a MK V exposure suit for eight of the nine hours preceding the accident. Subsequent to the preflight briefing the pilot was queried by the squadron skipper concerning his general condition. He replied that he felt fine and was not too tired to fly a three-hour night flight. (*What else would a pilot tell his CO?*)

To comment on the degree or possible effects of fatigue in this accident must be approached with conjecture. Fatigue is considered an immeasurable quantity based only on the merit of the evidence at hand. To say that the pilot would not have struck the ramp had the events or conditions of this day been different would be pure speculation. Since the pilot had logged 5½ hours of flight time in an eight hour period it was the opinion of the Board that there was some degree of fatigue present and therefore was considered a contributory factor.

In two known instances, the illusion of being high on a night approach to this ship was overpowering to the extent that the pilots lowered the nose and eased power while recognizing a low 'ball. The immediate and only proper action is, of course, to believe and fly the 'ball!

The pilot hit the nail on the head when asked how the accident could have been avoided. *"Primarily, it could have been prevented by my flying a correct pass."*

A REVIEW OF SIGNIFICANT AIRCRAFT ACCIDENTS

Proficiency

Ol' Walt, you know Walt Smitty, I'm sure, and yours truly, Will Riskit, had been ok'd for a bug-smashin' T-28B ride from NAS Boondock to the east coast to build up our already impressive flight time totals. First, perhaps I should explain that through some typical assignment foul-up Walt and I (both hot, special-card, experienced aviators) had been erroneously assigned to shore duty staff billets. We were sure that the big men up there in D.C., as soon as they realized their mistake, would send us (hot, special card, experienced aviators) back to the tail-hook Navy. But in the meantime, to get a breather from the paper mill, we had condescended to help out NAS Maintenance by putting some time on their bird.

As was our habit from long experience in this flying game, Walt and I allowed a full 15 minutes for getting into flight gear, making a steely-eyed check of the weather, filing our flight plan, having a cup of joe, and preflighting the aircraft. The weather was VFR to the moon, which wasn't much of a challenge to our talents, but we filed IFR anyway and headed for the line. After a thorough preflight of our little training bird (we're both of the tire-kicking school of preflight) we fired up the old R-1820 and headed for the runway. I was in the front and Walt had condescended to do the backseat "book work" of the first leg. At the end of the runway I kept getting bodacious mag drops. However, reaching into my vast grab-bag of flight experience, I decided to try the mag check again—this time with the mixture rich. This solved the mag drop problem, and I commented to old Walt about how they're not makin' em like they used to.

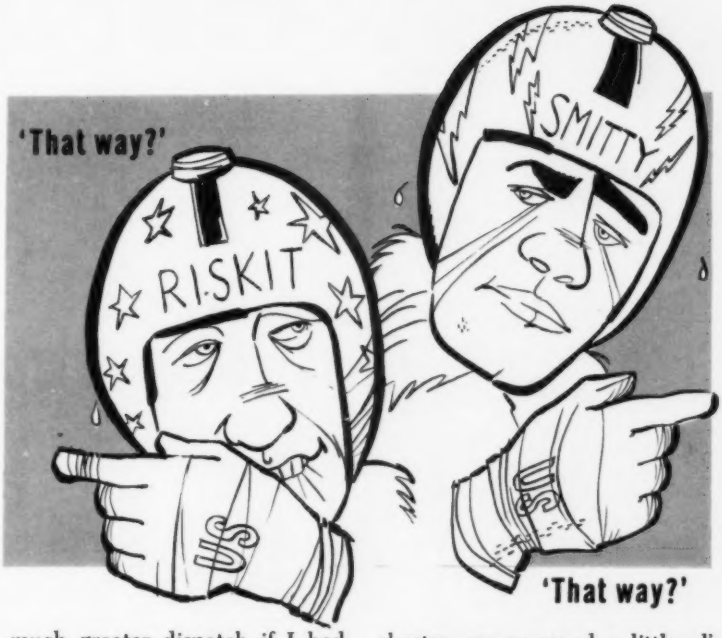
Just about the time I was ready to call for clearance, Walt allowed as how I'd better pass back the FLIP charts as sort of back-up to his highly developed navigational acumen. Well sir, right then and there I realized we had been duped by these clods in Operations. They'd forgotten to put a nav-kit in the bird. I called the tower, informed them of their boo-boo, and much to the tower operator's embarrassment, we taxiied back to the Ops building. I also informed the tower people as nicely as possible to minimize any further chagrin on their parts, that they might as well toss in a couple of fuel chits as well. Walt and I were as forgiving as possible about this foul-up too. After all, such are the inconveniences we (hot, special-card, experienced aviators) must face when inadvertently assigned to CRT billets.

Well sir, back to the runway we went. After completing my personal checkoff-list (cigarettes, lighter, handkerchief, candy bar) we were off into the blue. Immediately I could tell that "Center" had a trainee controller on the air, since he was really confused, screaming a lot of nonsense about frequencies, radar identification, and such. Obviously he wasn't listening either, since Walt was amicably chatting with him. Walt later pointed out that those maintenance clods

must have crossed the mike and intercom button wiring. Just to be on the safe side I hit the switch to take radio control in the front cockpit. A couple of my calls to Center were answered by NAS Tower (boy, do these air control personnel get confused) so, with the lightning-like decisions for which I am known, I switched over to Center Frequency. From then on Walt and I got everybody squared-away in short order. When those FAA boys realized who they were dealing with, the rest of the first leg was relatively uneventful.

About halfway to our destination Walt and I (with our combined technical competence and knowledge of aircraft systems) were quick to note that the right wing tank was being emptied only half as fast as was the left wing tank. What to do? Naturally, we decided to land somewhere, since we couldn't make it on the left tank alone, and we knew the 1820 was a little fussy about running smoothly without fuel.

Because of the poor quality of printing on current FLIP charts, the poor quality of ground maintenance on some of these FAA omni stations, and the fact that in-flight visibility was restricted to about 50 miles, we weren't too sure of our exact location. After 10 or 15 minutes of moderate activity in the rear cockpit (Walt's banjo kept getting in his way as he tried to tune the radio gear with a cigarette in his hand), Walt managed to pinpoint our position as somewhere over western North Carolina. I, of course, could have done the task with much greater dispatch if I had had some nav pubs in the front seat.

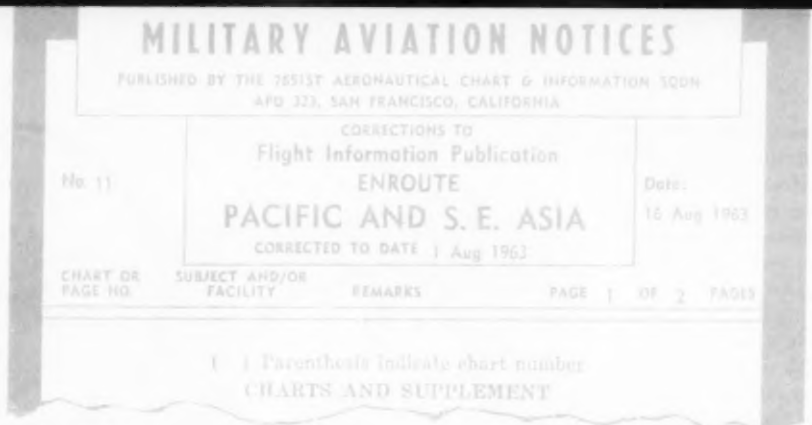


We finally found an omni station that wasn't broadcasting bogus ID signals and selected for our landing spot a civilian field with contract fuel. After 15-20 minutes of fruitless scanning and selective orbiting, (during which we remembered to cancel our IFR and inform Podunk Radio we were changing our destination – cool thinking, eh?) a couple of lesser aviators might have concluded that they were lost. But ol' Walt and I finally solved the problem. After turning his confusing FLIP chart 90 degrees, Walt determined the field was *north* not west of the omni station, and from there on it was a piece of cake.

To make a long story a little shorter, we removed a little ol' mud clod from the starboard fuel tank ram/static vent (terrible maintenance at Boondock NAS– the plane captain missed that little jewel on his preflight inspection). We refueled, refiled, and hopped on to the east coast for a short chin with our old fleet buddies. Not wanting to air dirty laundry, however, we were discreet enough to refrain from any comment on our difficulties which might unfavorably reflect on the shore establishment.

To this day, however, ol' Walt and I wonder what embarrassment and heartache might have resulted had these trying circumstances been faced by a couple of birdmen with less aviation savvy than we. After all, we're a couple of hot, special-card, experienced, aviators . . . .

PROS?


MILITARY AVIATION NOTICES

PUBLISHED BY THE 7651ST AERONAUTICAL CHART & INFORMATION SQDN
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CORRECTIONS TO
Flight Information Publication
ENROUTE
PACIFIC AND S. E. ASIA
CORRECTED TO DATE 1 Aug 1962

No. 11 Date: 16 Aug 1962

CHART OR PAGE NO. | SUBJECT AND/OR FACILITY | REMARKS | PAGE 1 OF 2 PAGES

( ) Parenthesis Indicate chart number
CHARTS AND SUPPLEMENT

Like do you read-MAN

There is a new definition of "MAN" floating around. Of the unabashed type, it means essentially "a little red bordered piece, in a variety of sizes and invariably associated with the Air Force and Navy." Certain of these have been known to appear without the little red border, but they accomplish the same mission.

The Military Aviation Notice (MAN) is a list of changes issued periodically and/or as required to correct Aeronautical Information Publications. Distribution of MAN within the U.S. is irregular because of the revision of FLIP – U.S. to coincide with FAA's airway change schedule and the effectiveness of ConUS NOTAMs.

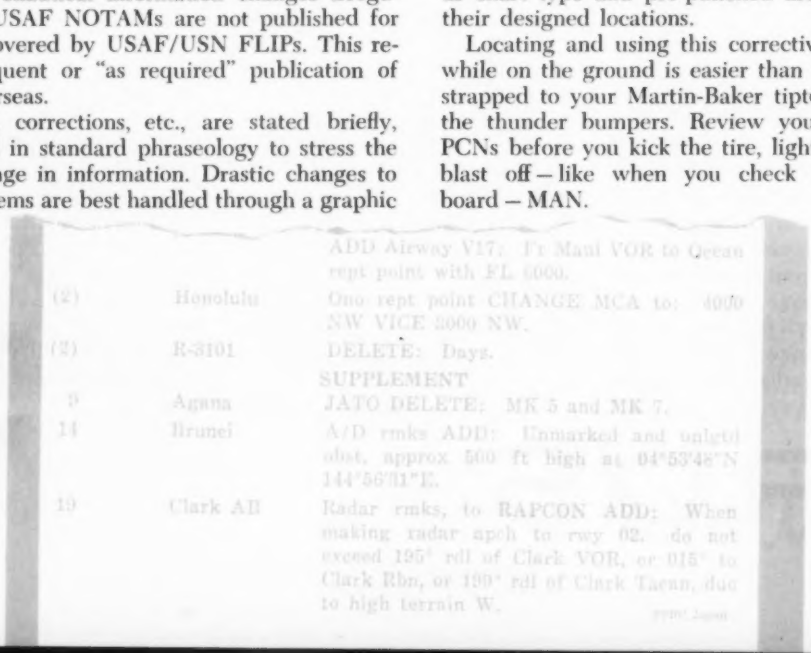
However, in overseas areas, ACIC organizations receive aeronautical information changes irregularly and USAF NOTAMs are not published for all areas covered by USAF/USN FLIPs. This requires frequent or "as required" publication of MANs overseas.

Changes, corrections, etc., are stated briefly, clearly and in standard phraseology to stress the actual change in information. Drastic changes to airway systems are best handled through a graphic MAN revising a chart in part or entirety.

Now, when a MAN is not a MAN, obviously it is a PCN (Planning Change Notice), another list of changes and corrections to AIPs. This list pertains to substitute route structures, oil burner routes, air traffic rules, regulations and other items contained within sections of FLIP Planning. PCNs are issued on a schedule basis in some overseas areas, but primarily they are issued on an as required basis for all FLIP areas of the world and for all sections of FLIP Planning.

Personnel receiving a MAN in the 4¾" x 10" size will find that securing them to the inside of the Supplement front cover will provide a permanent, ready reference. Other forms of notices such as chart type and pre-punched are best kept in their designed locations.

Locating and using this corrective information while on the ground is easier than when you are strapped to your Martin-Baker tiptoeing through the thunder bumpers. Review your MANs and PCNs before you kick the tire, light the fire, and blast off – like when you check the NOTAM board – MAN.


ADD Airway V17: Ft Maui VOR to Ocean rept point with FL 6000.

(2) Honolulu — One rept point CHANGE MCA to: 4000 NW VICE 5000 NW.

(2) R-3101 — DELETE: Days.

SUPPLEMENT

9 Agana — JATO DELETE: MK 5 and MK 7.

14 Brunei — A/D rmks ADD: Unmarked and unlgtd obst, approx 500 ft high at 04°53'48"N 144°56'31"E.

19 Clark AB — Radar rmks, to RAPCON ADD: When making radar apch to rwy 02, do not exceed 195° rdl of Clark VOR, or 015° to Clark Rbn, or 180° rdl of Clark Tacan, due to high terrain W.

Safe by a 'knot'

After a 10-day inport period we were back at sea undergoing air-ops. It was the first day out and after some last minute changes in launch times and fuel loads, I headed across the flight deck to man my A-4C. I was originally scheduled for a qual period but due to the delayed launch I was only to get one trap after a 20 minute hop. The fuel load was to be 3400 pounds but when I arrived at the aircraft I was told by the plane captain that I had 5000 pounds consisting of full drops (4000 pounds) and 1000 pounds internal. Anxious to get a hop in I decided to take it, although better headwork here would have told me I would be in a tight situation if my drops failed to transfer. The line chief also advised me of the placement of the 5000 pounds. A visual check of the drops confirmed that they were full and after turnup my internal fuel gage read slightly over 1000 pounds. Once on the cat I gave a thumbs up to the 16,000 pound gross weight. After turnup and a check of the instruments I pressurized my drops to insure immediate transfer and saluted the cat officer. After a normal rotation off the cat there was slight settle as I held the 3 o'clock position on the angle of attack. I noticed my airspeed climbing through 135 knots. About a minute later, after I had cleaned up, I again checked my fuel gages and was surprised to see it start to climb rapidly to 4800 pounds, then slowly to 5300 pounds. At this time my external fuel indicated 3400 pounds.

Post flight investigation revealed that the aircraft was fueled to 9400 pounds prior to entering port and received three low power turnups during the inport period. It was not refueled after any of these turn-ups and this was enough to burn 600 pounds out of the fuselage tank causing the fuel gages to drop to 1000 pounds. The plane captain was unaware that the aircraft had not been defueled but was told by other squadron personnel that this had been done. This was the case in another squadron aircraft that morning and there was a misunderstanding on the side numbers involved. The wing tank was not visually checked for being empty and I was eventually launched 3000 pounds plus over my advertised launch weight.

The cat officer was launching all aircraft with 14 knots excess flying speed and this was sufficient gravy to give me *one knot* of flying speed with my additional weight.

ANYMOUSE

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. As the name indicates these reports need not be signed. Forms for writing Anymouse Reports and mailing envelopes are available in ready-rooms and line shacks. All reports are considered for appropriate action.

— REPORT AN INCIDENT, PREVENT AN ACCIDENT —

Near-Miss

We were on final GCA at a SE U. S. NAS in a C-54 with 50 Midshipmen back aft. Reported weather was 800 scattered, 1500 broken, 5 miles and rain showers. We intercepted the glide path at 2600 feet and everything was proceeding normally down the final. Good corrections from the controller, checklist complete, just waiting to break contact with the field at the end of a routine flight. At 2-1/2 miles we were cleared to land, winds light and variable. About 800 feet the copilot reported runway in sight dead ahead. Took a peek and sure enough, there it was dead center ahead.

Suddenly out of the corner of my eye, I noted an unusual movement low and to the left. Glancing at the movement, I was horrified to see a P-2 crossing below me about 200 feet going from left to right. If the altitudes had been the same, our crash would have been spectacular. There was no time for any evasive action. Afterwards, we found that the P-2 was VFR in the pattern and had been cleared for landing. This occured about the same time that we had also been cleared to land by GCA. Shortly after we broke out, the P-2 told the tower he had us in sight and was going to take it around. Instead of extending or turning away, he elected to continue across and below our flight path to reenter downwind. As we were on GCA frequency, we heard none of this and were completely unaware of the other plane until he passed below us.

This particular station uses a series of lights between tower and GCA to indicate clearance to land although an intercom is installed. The GCA controller was as unaware of the other aircraft as we were and probably got quite a shock when the other target popped up on his azimuth scope and joined ours. I recall hearing his pregnant pause about the same time we got our shot of adrenalin on first glimpsing the P-2.

This situation might have been prevented had the P-2 driver taken a flight path which would have increased our separation rather than continuing with the race-track pattern. The tower, on seeing the P-2 continue in the pattern although going around, should have notified GCA of the traffic for relay to us. Too often, there is a sad lack of essential information passed between tower and GCA. Too much chit-chat can reduce the capability of both operations; however, it's better than too little or none at all.

The published weather in aerology at this time was 800 scattered, 1500 broken. We observed much more than 2/10th coverage on our approach. Other pilots were reporting 500 feet in the area and broken sky coverage. In other words, the field was IFR for my money, not marginal VFR. I don't mind taking the consequences for my own goofs but I'm not at all happy to be put in an untenable position by someone else without a bit of warning.

After talking to the other pilot, I found that he had had to remain under 800 feet in the traffic pattern to stay VFR. He had seen me just prior to the 90 and didn't have a whole lot of time to take evasive action, so had elected to pass below me. He said the tower reported a GCA aircraft had just reported 6 miles when he called the 180. This type of separation may be fine in good VFR weather but it is mighty sorry in marginal weather, especially if the controllers don't call their traffic right on the button.

Pressure Loss

Takeoff was at 0930 for a 4-hour cross-country flight in an S-2. Upon reaching the end of useful runway the wheels were retracted normally. An odor, thought to be an electrical fire or hydraulic fluid, filled the cockpit. It was decided to investigate the cause and return to home field if the symptoms remained. The odor promptly disappeared and the flight was continued as all temperatures and pressures were normal.

At 1045 hydraulic pressure had fallen to ZERO and the main hydraulic tank appeared to be empty. An emergency was declared, instrument flight plan was cancelled, and a nearby approach control was contacted for landing at a nearby AFB.

The standby manual hydraulic system was selected. Hydraulic pressure returned to normal and the wheels came down. An unsafe indication remained for the nose gear. A hole was then cut in the cockpit deck with a survival knife (using the hydraulic handle as a crowbar) to insure that the mechanical linkages were properly positioned. . . . all normal. This required about 5 minutes work.

The AFB requested we land elsewhere for they had no barrier. However, we had decided, in the cockpit, to divert to a Navy field with maintenance facilities for our aircraft (fuel state was 2.5 hours with gear down).

A low pass was made past the Air Force Tower and "Gear appears to be down-and-locked"

was received. We filed VFR to the Navy base a hundred miles distant, and upon reaching there made a precautionary normal landing.

The cause? Nose wheel actuating cylinder was incorrectly installed causing a hydraulic line rupture when the gear came up and the landing gear indicator microswitch to bend out of position. Loss of hydraulic pressure and fluid caused subsequent burning out of both engine driven hydraulic pumps.

Altimeter Error?

The field elevation was 477 feet, so naturally I set my altimeter to same and was ready to go in my trusty *Crusader.* (Night CQ no less.) My section leader was gabbing with ground control/clearance delivery but I stayed on tower frequency to enjoy the action. When he finally came up on my channel, a bit peeved for some reason, I was ready and rarin' to go have a look at that boat.

The first part of the flight was normal and we finally broke up for individual CCAs. The initial part of the approach was a thing of beauty, on altitude and radial all the way. Man, it was dark down there so I decided to dirty-up at 1500 feet vice 1000 feet. The gear went down very well by 1300 feet but as I raised the wing this little red light caught my attention. I looked at the radar altimeter and to my utter horror, observed that it indicated 200 feet. I casually screamed that I was aborting the approach due to a bad altimeter and almost went into orbit.

Shaky minutes later I discovered my altimeter had been set at 1477 feet not 477 feet. "So that's why we were holding at 25M instead of 24M as assigned." I just thought the section leader was fouled up.

Now I always and I mean *always* set my altimeter to the field altimeter setting *then* I set it to the field *elevation;* noting the error. If you do this it is impossible to have it set 1000 feet high or low.

P. S. The altimeter was a counter-pointer type.

How High the Loon

The tactical coordinator in an SP-2H had just called the drop of a sonobuoy, smoke marker, and practice depth charge from about 800 feet. The plane commander had previously reported the surface to be clear for the drop. Our bow and waist observers had not reported any aircraft in the area.

Within five to ten seconds after the drop the copilot observed an A-4 pass *underneath* us heading down sun. This was followed by a sharp pull-up to insure being seen by the hopefully envious P-2 crew.

This Anymouse has witnessed precisely the same display of airmanship (?) numerous times in the past 18 months. The lower you fly, the more they seem to flock *underneath* you. This one was so close that I am convinced the next time an A-4, F-4 or F-8 is unexplainably lost at sea it will be because the pilot is wearing a sonobuoy for a head.

It is recommended jet jocks give wide berth to ASW types over water at all times.

Plan — Then Follow Through

While flying plane guard in a UH-2A during EastPac exercises, I was told to proceed to a cruiser at the completion of the recovery and pick up a passenger who was going on emergency leave. The last plane was trapped and I headed for the cruiser, mentally debating whether to land or not as I had never made a cruiser landing before. As I approached the ship I decided to play it safe and hoist the passenger aboard. I told the copilot to monitor the gages and the crewman to prepare the sling. In passing over the fantail I changed my mind and decided it wouldn't be too hard to land after all. I also thought it would be nice to have a cruiser landing in my logbook.

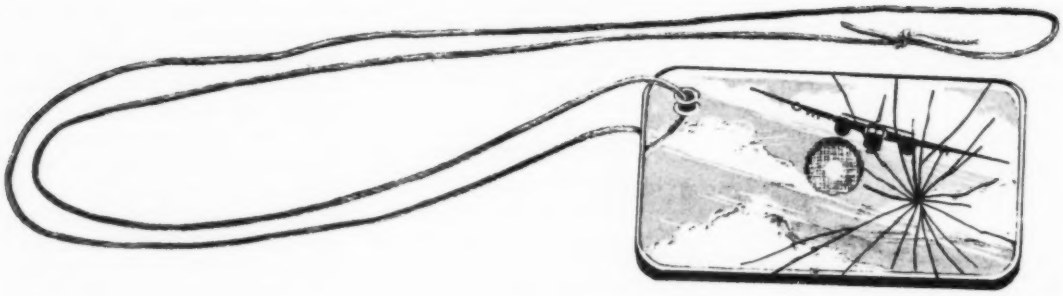
I stated over the ICS that I had changed my mind and was going to land. The copilot was still watching the gages and the crewman was occupied with the sling. I started to set down following the LSO's non-standard directions to the best of my ability. I felt the tail wheel touch. At that time the LSO waved frantically, threw his flags to one side and ran toward the rear of the aircraft. At first I thought I had hit something with my tail wheel as I came across the fantail. But in thinking of wheels, I remembered I had forgotten two. I applied power just as the right aux tank touched the deck. After the waveoff, I came back around and made a normal hoist pickup, as originally planned. After a normal landing on the carrier, an inspection of the underside of the aircraft revealed the paint on the bottom of the starboard aux tank, the external cargo hook and the UHF antenna housing was scratched. The relief valve was pushed in.

Due to a last minute change of plan, what resulted in a few minor scrapes could have turned out to be a major *Scratch.*

Unlike the flight control systems on present day high performance aircraft—the Naval Aviation Safety Center desires a continued feedback.

Has information in any Safety Center publication ever helped you to prevent an accident, avert an injury, or deal with an emergency in a better way?

If so, and you have not already informed the Safety Center, it is particularly desired and important that you do so. Such feedback is vital to all departments at the Center and for fiscal support of our safety research and education program.



Signal Mirror

Dear Headmouse:

We had a heated discussion in our squadron concerning the carrying of glass signaling mirror in the mae west. Our parachute riggers say that according to BACSEB 55-61, Para 4 (e), the signaling mirror is not authorized equipment for the Mk-2 life vest, and insist that they not be carried in them. I have read the BACSEB and do not interpret it in that manner. I feel that I as a pilot, and other pilots, should be able to decide for ourselves whether or not we want to carry them.

Our parachute riggers say that the mirrors are a hazard due to the possibility of the glass breaking and puncturing the mae west. They also hint that pilots have lost their lives because of these mirrors breaking. I have not heard of such a case myself, nor can they quote me one. Have there been any such cases to the Safety Center's knowledge? Also, please clear up the question of whether the mirror is not to be carried, not recommended to be carried, or is up to the individual pilot's discretion.

Our squadron is using the mirror at present and has placed it in an oilcloth type packet located on the right hand side between the vest chambers and the pockets for the distress signal and dye marker. It is hoped that if any danger of breakage and puncturing the vest exists, the heavy cloth would prevent such an occurrence.

A. L. EDMONSON, LT
SAFETY OFFICER, HS-9

► **BuWeps says there is nothing in their records to indicate that you can't carry a signal mirror in the Mk-2 life vest. In addition, the Naval Aviation Safety Center has recommended to the Bureau that the SEEK-1 mirror be obtained and issued separately. As far as we know there is no documented case of a mirror causing a fatality.**

Very resp'y,

Headmouse

Manpower

Dear Headmouse:

The author of the article on quality control in the parachute loft in the January 1963 APPROACH states that "squadrons flying A-4s have an allowance of three parachute riggers, but if the unit is lucky, it might have two qualified riggers." As of this writing, our squadron's allowance has not changed from the days of the P-5, P-2 to the P-3 aircraft. However, the workload has increased manyfold. The following is the allowance list for a VP squadron:

	Allowance	On Board
E6	1	1
E5	1	0
E4	1	2
E3	0	0
E2	0	1

I understand the parachute rigger's rate is critical manpowerwise but not workwise. You may or may not be the proper one to whose attention this should be brought. However, I cannot think of a better person.

Are there any prospects of more riggers into the field?

As food for thought, recently the subject of pro-pay was brought up as per usual, and a Chief remarked when career counseling young fellows, "Send them where the money is." To me, as a proud rigger, this is distasteful but then again, is it? If people have this kind of attitude where will the rigger's rate be three, four or 10 years from now? As in the past, riggers are at present in short supply. It is difficult at best to try to maintain quality work without the proper tools, in this case, the necessary manpower.

RIGGERMOUSE

► **The Manpower Authorization /Requirements Plan (MARP)**

Have you a question? Send it to Headmouse, U.S. Naval Aviation Safety Center, Norfolk 11, Virginia. He'll do his best to help.

makes provisions for COs to express personnel needs of a given activity. To the maximum extent possible, the Chief of Naval Personnel is responsive to recommendations from commanding officers of units of the fleet concerning manpower authorizations. Let the skipper know — maybe he can help. If a squadron receives a different type of aircraft that would increase a workload in your field. It seems a request for change in allowance is in order.

Very resp'y,

Headmouse

X-Ray Funding

Dear Headmouse:

Have followed the NDT articles (Sep '63 and Jan '64 issues) and find them interesting but not very promising at this point. Here's the problem: AMDs having portable x-ray equipment and radiographers are reluctant to perform x-ray service for squadrons because of the lack of funds — *no film!* If we can't make use of this equipment it's likely to join engine analyzers on the shelf.

What are your recommendations to overcome this bottleneck?

BROKE BLOKE

► According to BuWeps it is the AMD's responsibility to provide the service and to procure the film. If funds are not available for this purpose a letter to BuWeps, via channels, should be submitted requesting assistance.

Very resp'y,

Headmouse

Transient Jets

Dear Headmouse:

Some five years ago CNO came out with a series of messages which prohibited transient jet flights into joint-use airfields (civilian) except as an alternate, emergency, or official business. As far as I know, this restriction has never been cancelled nor has a permanent type instruction been issued regarding this subject. There seems to be a great deal of misinformation among aviators regarding the status of this directive. An enlightening blurb in APPROACH would be sincerely appreciated and settle many a discussion.

FRED THORN, CDR,
SAFETY OFFICER NARTU MEMPHIS

► The restriction to which you refer is still in effect; however, it has not been made a part of any permanent OpNav Instruction. This restriction has been included in several type commanders' instruction on cross-country flight.

Very resp'y,

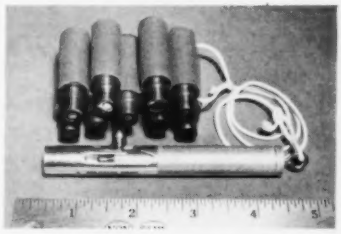
Headmouse

Flare Gun Modification

Dear Headmouse:

There has been some discussion in this squadron among the parachute riggers, ordnance men and pilots about the facility of using the pencil flare gun, which all our pilots are equipped with, in its present unloaded state. The fact that on some particularly dark night after an ejection, bailout or ditching the pilot attempting to use his flare gun will have to reach in a pocket, extract a cartridge and screw it in place hampered by wet, slippery gloves, darkness and perhaps rough seas, does much to detract from the beauty of this survival item. As a result we have tried to come up with a solution that would allow the pilot to carry one cartridge in place ready for firing. Our not-too-fool-proof system is an "L" shaped detent placed halfway down the barrel which holds the firing pin aft and is relatively difficult to jostle out of position. In addition, the gun with flare in place and another tube of flares beside it would be encased in a pocket sewn to the flight suit. We have only modified one flare gun to date awaiting any comment from your office.

ASO



► *Under no circumstances* should the pencil flare gun, either the BuWeps model or those commercially acquired be modified. Modifications such as you discuss would render the gun dangerous because it is *not* designed to be carried loaded. Headmouse's answer to the survivor's problem of loading in the water, in the dark is to carry the rounds in a bandolier of "gun tape" so that they will be together. We have tried this method in the open sea and it is workable and practical. Thank you for your letter.

Very resp'y,

Headmouse

Concern for man himself and his fate must always form the chief interest of all technical endeavor; never forget this in the midst of your diagrams and equations.

—Einstein

P.C.

A Definition

IN all Navy aircraft squadrons there is a group of men responsible for the general maintenance of the squadron's aircraft – Plane Captains. Plane captains from VA-212, attached to the carrier USS HANCOCK decided to list the attributes of plane captains, the ones from VA-212 in particular. Using the letters from the two words "plane captain" they came up with the following characteristics of their kind.

P A unanimous vote decided that the first letter signified *Pack Animal.*

L By all means, *Labor* is foremost in our minds – we cannot fear this item.

A The first of three A's in our title will go for *Aggressiveness.*

N We like to think of ourselves as being *Neighborly.*

E *Eagle-Eyed?* Yes, we are.

C *Courtesy* by all means plays an important role in any man's functions.

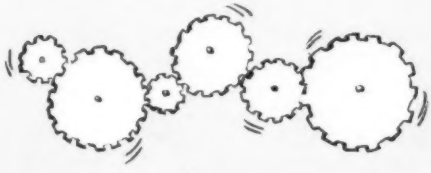
A It helps to be *Agile.*

P Where does any man stand without *Pride?*

T A certain amount of *Talent* is required.

A Being an *Adjutant* to safety and progress cannot be disregarded.

I Taking *Interest* in your work lubricates those corroded gears.



N Last, but not least, we *Naturally* think we have the best *PLANE CAPTAINS* anywhere.

OVER THE SIDE

On a carrier hangar deck, an AN walked behind a jet with its tailpipe directed out the no. 3 elevator ramp—unaware that it was turning up. The jet blast blew him over the side into the sea. Witnesses sounded man overboard. The ship was stopped and a helicopter was dispatched to the rescue. The helicopter reached him almost immediately but his rescue was to be anything but routine. Here are excerpts from the helo pilot's account in the Rescue Report. . .

"As we stopped in a hover over the survivor, who was apparently treading water successfully, my crewman reported the hatch opening and the sling going down. Then he said the man wasn't getting into the sling and he thought that he should go down to help him. I agreed. He immediately took off his hard hat and hooked on the wire with the Chicago grip. I backed off a little to keep both men in sight, paying out enough slack cable so as not to hamper them.

"With some difficulty, the crewman who had inflated his life vest got the sling around the survivor properly, then tried to loosen the chin strap on the survivor's flight deck helmet. The survivor was visibly coughing and choking on salt water. Unable to loosen the helmet strap, my crewman started back up the wire to a place where I could pick him up properly. The survivor, seeing the crewman move away, suddenly *ducked out of the sling and started struggling toward him.* When I saw him get out of the sling, I was so shocked I fairly shouted to the tower what he'd done. I saw him pawing at the crewman and then saw the sling floating away by itself, out of reach, apparently completely detached from the cable.

"I decided to get the crewman back aboard to keep him from getting too exhausted and to try from the beginning again. As soon as I could after starting the hoist up, I glanced through the hatch and there was the *survivor,* holding the wire, coming up ahead of the crewman. He obviously had the wire around his hand in such a manner that both his and the crewman's weight were on it. Just then his grip slipped and he fell back into the water. I transmitted that we needed help and *fast.* The tower answered that they would send a lifeboat and the other helo. That was the last radio transmission I recall hearing.

"I reeled my crewman on into the helo and he immediately put a padded crewman's sling on the hook and lowered it back to the survivor. This time the survivor hooked one arm through the sling and held his wrist with his other hand. I knew this wasn't a recommended hoisting method but I decided to try it anyway because the man was obviously hurt and tiring by then and was barely able to keep his head up. I hadn't heard where the other helo was and I was afraid the lifeboat might be too late. At any rate, it worked out well—I was hovering very low so it wasn't a very long hoist. My crewman performed all this using ICS failure procedures; he hadn't had time to don his hard hat.

"After the hatch was closed and we were moving off, my crewman broke open our first aid kit and began treating the survivor's injured hand. . .

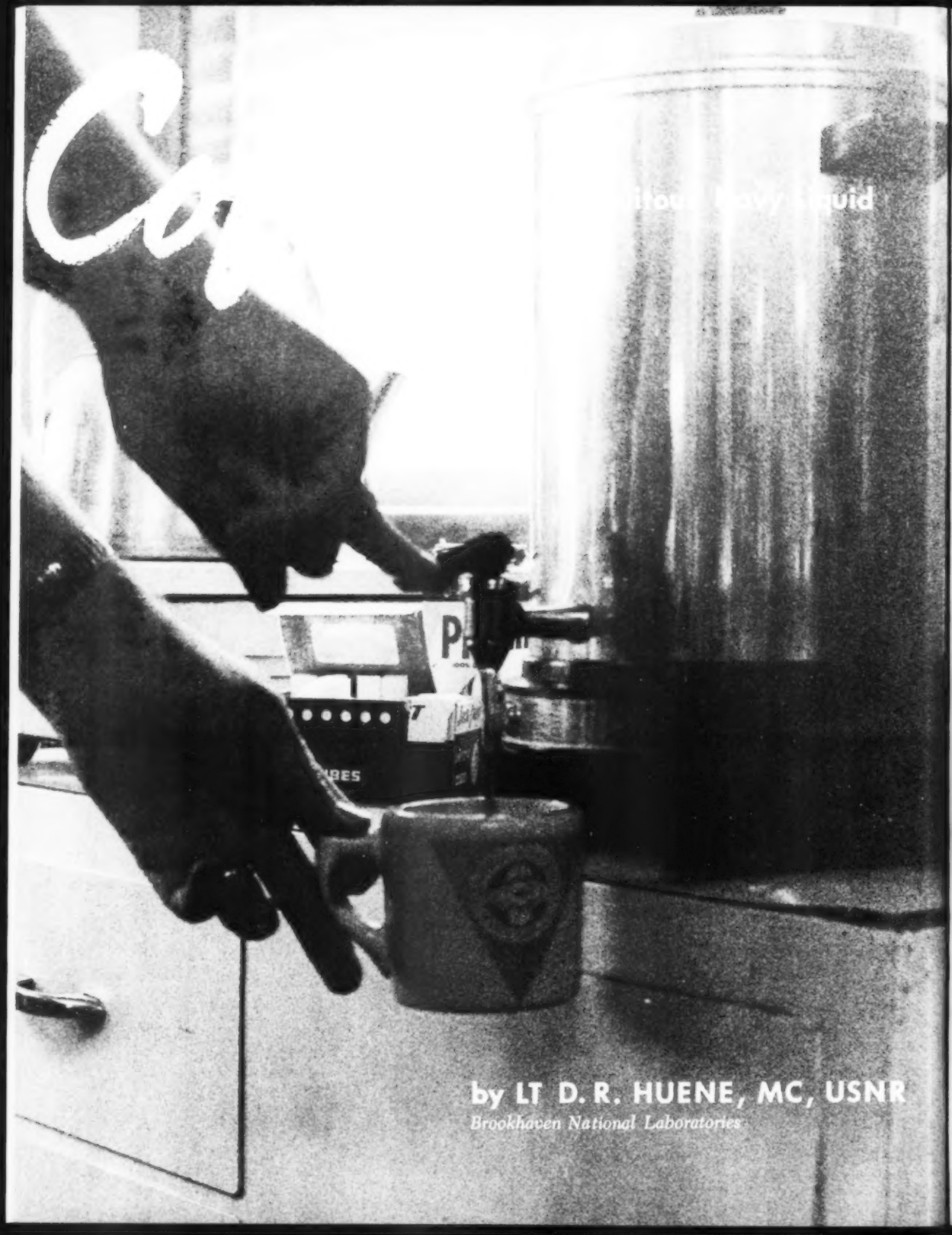
"I am definitely of the opinion that flight deck personnel should wear or carry something that would be visible in the water. Even though the sea state was very smooth at this time, this man was extremely hard to see. He was apparently in at least mild shock and had no idea what he should do or what the rescue crewman was trying to do. It appeared to me that he expected the sling to support him in the water and became even more frantic when the

crewman moved away and there was nothing holding him up. He got out of the sling and in the process somehow unfastened it from the hook. The hook and sling were subsequently inspected and found to be in proper working order so there is no other way the sling could have become disconnected. I strongly believe that without my crewman's coolheadedness and initiative the survivor would have panicked even more and could have possibly drowned before other help arrived. You can't tell what to expect with a conscious, panicky man in the water—at best it's risky to go in with him. My crewman acted without apparent thought for his own safety. He was there to save the man and he wasn't going to let any setbacks stop him. . ."

Medical examination showed that the survivor had two broken fingers.

Comments on this case were:

- The nature and tempo of operations on carrier flight decks and hangar decks necessitate constant vigilance.
- Frequent lectures and demonstrations should be given to all hands aboard aircraft carriers to familiarize them with helicopter rescue equipment and procedures.



by LT D. R. HUENE, MC, USNR

Brookhaven National Laboratories

The most frequent initial informal introduction of a naval aviator reporting to his new squadron would probably be the coffee mess. A conjecture might be postulated that during his tour of duty, this aviator will probably spend almost as much time drinking coffee as he will in the air. The Navy custom of liberal availability of this beverage and the associated aura of congeniality and gregariousness which it of necessity provokes, makes it reasonable to further investigate some of the properties of this curious concoction.

Coffee beans are the dried fruit of an evergreen bush, *coffea arabica*, and resemble the common cherry in color, but are somewhat smaller and more elongated. After drying, they are usually roasted, then ground to a smaller size, and from this an extract is made with hot water. Generally, credit is given to an obscure Arabian goat herder named Kaldi for the discovery of coffee in the year 850 A.D. This astute but financially naive Arab observed that after his usually lazy charges partook of a particular berry, they seemed to become unusually frisky, alert and energetic.

As is now well-known, the main pharmocologically active ingredient in the coffee extract is a methylated xanthine derivative, called caffeine. Caffeine is a white, glistening crystalline substance and although it exerts direction on voluntary and involuntary muscle, the kidneys, and other organs, the main effect from the standpoint of aviation medicine is related to the response of the central nervous system and heart muscle. In moderate doses, this drug stimulates the brain to increase performance and lessens the effects of fatigue. Toxic effects on the nervous system have never been unequivocally observed in man; this is most probably due to the tremendous amounts of the drug needed to produce such symptoms.

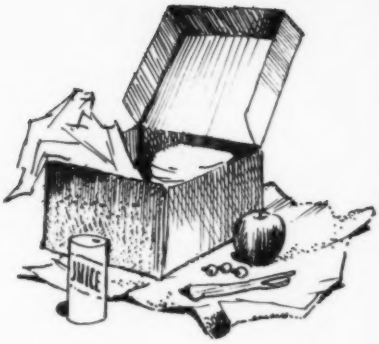
Caffeine also affects the heart muscle directly but the mechanism by which this stimulation occurs remains an enigma. However, it has been well-documented both in man and in animals that after excessive doses there ensues a proclivity toward cardiac arrhythmias. Everyone has probably experienced so-called "heart palpitations" where there is a definite period of the heart beating irregularly (commonly called "flip-flops"). As long as these occur at very infrequent intervals and are not aggravated but decreased by exercise, they are considered to be within normal limits and are of no significance. However, it is now known that excessive intake of caffeine can predispose the heart to these irregularities so that they then become a distressingly frequent symptom which could interfere with an aviator's performance. Of interest, but of questionable importance, is the recent long-term evaluation of men and their habits in relationship to the development of heart disease. Among other things, this study revealed a small, but statistically significant correlation between the incidence of heart disease and the excessive ingestion of coffee. This phenomena ensued following a coffee intake greater than 150 cups per month (5 cups per day).[1]

A cup of coffee contains approximately 100 to 150 milligrams of caffeine, an amount representing an average medical dose, if administered by a physician. It is not uncommon to see naval aviators who routinely drink an unbelievable number of cups of coffee per day, come to the flight surgeon for confidential consultation of their distressing symptoms. They are genuinely shocked to find a positive correlation of their complaints with their excessive ingestion of this beverage. A personal poll of aviation personnel was conducted by the author as to what could be considered an average coffee intake per day. The usual answer was 10 cups and ranged from a low of 5 to a high of 25 cups. Although this response would gladden the soul of every coffee manufacturer, it may be considered a rather generous amount by the flight surgeon. Extrapolating this response to the aforementioned data raises the question of whether aviators are inviting possible deleterious effects from their chronic high coffee intake.

In conclusion, as with wine, women and song, moderation is probably the best answer to the question of amount of coffee ingestion. This would take advantage of the central brain stimulation and minimize the risk of deleterious or detrimental manifestations.

[1] *O. Paul, M. Repper et al. A longitudinal study of coronary artery disease, Circulation, Vol. 28, No. 1, July 1963, pp. 20-32.*

Food Poisoning



Box lunches can be a potential source of food poisoning – a dangerous situation for the naval aviator. On the ground the unfortunate victim of food poisoning can seek medical advice or simply let nature take its course. As all of us know, in the air the situation can become critical. A severe case of food poisoning with nausea, vomiting or diarrhea could cause loss of the aircraft and all on board.

To date, the Navy has been extremely fortunate – there have been no cases reported in which food poisoning has incapacitated pilot or crew in flight. This good record can be attributed to the Navy's foodhandling program and to pilot and crew precautions.

A safety council medical committee discussed the problem of food poisoning not too long ago. Their procedure cuts the odds for trouble in dual piloted aircraft. Of four box lunch menus prepared with no duplication of perishable foods, two have no duplication of any item. The pilot eats one, the copilot the other. To rule out the chance that all sanitary precautions have failed, pilot and copilot should eat at least an hour apart. Most food poisoning begins with an uneasy feeling about 45 minutes after eating–better for the pilot or copilot to be hungry than sick. This same committee recommends that lunches be kept in the cooler part of the aircraft and not in the electronics compartment.

What are the causes of food poisoning? The food itself may contain harmful substance such as toxins or bacteria, these substances may have been introduced into the food at some stage of processing, or these substances may be introduced into the food during preparation. The latter area is one in which local authorities can concentrate preventive measures.

A number of things can be done to maintain high quality food service facilities and food-handling practices:

- Education of food service personnel on food-handling hygiene, food sanitation and personal hygiene.
- Inspection of proper food-handling practices with regard to storage, cooking and refrigeration.
- Protection of foods from flies, rats, mice, etc.
- Discovery and exclusion of disease carriers from food handling jobs.
- Inspection of standards of cleanliness of kitchens, dining rooms, equipment, utensils and dishes.
- Proper waste disposal.
- Proper procurement and treatment of water.

As one flight surgeon told his squadron some years ago, with strict adherence to medical regulations regarding handling and preparation of food, it is virtually impossible to get food poisoning from a Navy mess. This is not true, however, after the food is removed from the mess and placed aboard an aircraft.

When box lunches are prepared, each box lunch should have stamped on the top the time by which the food must either be eaten or discarded. Observance of this "expiration date" protects you from the multiplication of harmful bacteria. To ignore this time factor not only endangers you but your usefulness to the flight. For the same reason, it is extremely dangerous to remove food from the aircraft to eat after the flight.

Chances are, the only food poisoning you will see in the Navy will come from some "greasy spoon" somewhere or because somebody violated regulations and carried food into quarters. To help improve the odds against food poisoning, continued close attention to sensible precautions and practices is recommended.

Man Overboard!

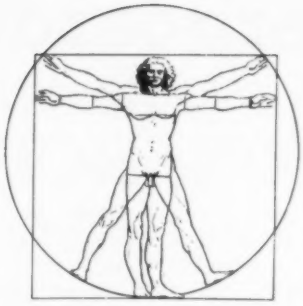
That cry strikes a chill in every sailor, especially if he is a flight deck crewman aboard one of our carriers. High winds added to unexpected jet blast, prop wash and occasional wet decks greatly multiply his chances of finding himself in the water.

Two squadrons recently sent APPROACH their solutions to the problems of survival and flotation gear for flight deck personnel.

Beginning in September, 1963, during an East-Pac cruise aboard USS *Midway*, VF-21 plane captains and other flight deck crewmen were equipped with the LPU-2P underarm life preserver shown above. Weighing about 34 ounces, this life preserver is standard gear for Air Force crews flying over water. The preserver does not restrict maneuverability, is comfortable, easy to inspect and pack and easily put on and taken off. Used in pairs, the LPU-2P units provide two-chamber inflation with the same CO_2 cartridges found in the Mk-3C life preserver. The squadron has modified the strap assembly to hold plane captain's tools and has incorporated a Matrix model 761 survival light.

ATAKRON 86 has devised the flotation device shown below for use by its plane captains and maintenance personnel. W. H. Sullivan, PR1 devised the unit and is making 40 for squadron personnel working on the flight deck on USS *Independence*. When presented to the carrier's safety council, the pattern for the device was requested by the ship and all squadrons. Carried on a belt around the waist, the device consists of a life vest, H-4220-289-1891; a CO_2 cartridge, H-4220-372-0585; a whistle, D-8465-254-8803; a dye marker, 9Y-6850-270-9986; a flashlight, 9C-6230-255-0166; and a day/night distress flare, Mk 13 Mod O. These items are assembled and enclosed in a rubber-coated cloth container. The device weighs approximately 2 pounds and costs about $16.

The Naval Aviation Safety Center has been working on the problem of flotation gear for flight deck personnel for some time and has been attempting to coordinate with BuSandA, BuWeps and BuShips. Under the supervision of the Naval Parachute Facility, El Centro, a number of prototype production items of one design for a plane captain's integrated restraint/flotation garments were evaluated by VF-51 and VA-55 in the early months of 1963. Final reports recommended redesign of the garment because of an intolerable comfort problem under tropic climate conditions. A major design modification was accomplished which replaced the fabric vest of the garment by an adjustable/quick fit harness. VF-51 and VA-55 are re-evaluating the garments. The word is that pending satisfactory results of the fleet squadron evaluations and receipt of the reports from the squadrons, appropriate procurement documentation will be submitted to BuWeps for fleet procurement. APPROACH will endeavor to keep its readers informed on progress of this project.



PREFLIGHT the PILOT

A SIGNIFICANT causative factor in today's aircraft accidents is human failure—pilot factor. The increasing complexity of our operational aircraft and techniques result in greater demands on the pilot and less room for error. Why not preflight the most important component in this man-machine complex, the pilot? This is essentially what takes place every year when the flyer takes his annual physical examination. . .

After "preflighting" the pilot and if everything is found to be within normal limits, the pilot is given his medical clearance for flying duty (*Nav Med 1381 in the Navy—Ed.*) and we are assured he is a safe risk to perform his duties in the "wild blue yonder." The obvious outstanding deficiency in the preflighting of the pilot is the fact that it is accomplished only once a year. We have not met the pilot who would climb in an aircraft and take off on a mission without preflighting because "it was at overhaul less than a year ago", or because he personally gave the aircraft a thorough preflight six months ago.

Before each flight, the flyer should take as careful an inventory of himself as he does of his aircraft. Beginning a mission while fatigued could be just as hazardous as attempting a flight with inadequate fuel; flying with a blurred vision or ringing in the ears, could be just as hazardous as flying with a frosted windshield or communications failure. Any personal "malfunction" that the flyer experiences should be reported to his flight surgeon. . .

—5th AF Safety News

Disregarded Procedure

AN AE1 and an AE2 were working on a gripe that the after compartment heater was inoperative and that gasoline fumes were detectable in the compartment. The AE2 entered the aircraft through a port in the aft fuselage. He removed the spark plug from the heater, held it in a rag he had used to clean his hands and asked for power from the auxiliary power unit manned by the AE1.

When the plug sparked, a flash fire occurred. The AE2 tried to smother the fire with the rag but it caught fire and his clothes ignited. He dove out through the hatch, rolled on the hangar deck and extinguished the flames. He suffered second degree burns of the hands and arms.

Flight Surgeon's Comments: This accident could have been avoided had the electricians followed the proper approach for checking out defective heaters outlined in the maintenance manual.

Hand in Glove

THE hands of four surviving crewmen and one passenger on board an SP-2H which crashed on landing and burned show the fire protection afforded by gloves.

The first crewman was wearing only his right glove; on impact his left glove was in his hand. *Extensive second-degree burns of ungloved hand. No burns of gloved hand.*

The second crewman had on both gloves at impact. He took off his left glove to free his parachute harness which was caught on wires in the radio compartment. *Entire left hand suffered second degree burns. No burns of gloved right hand.*

The third crewman who states he "seldom uses gloves" did not have them on at the time of the accident. Extensive *first-and second-degree burns of both hands.*

A fourth crewman's gloves were in his pocket during the flight and ensuing accident. *Severe second and third degree burns of both hands.*

The passenger was wearing his complete dress blue uniform including fur-lined black leather gloves with loose slit wrists. The fur lining of his left glove caught fire. He took it off but kept the right glove on. *Second-degree burns of entire left hand. A few minor burns on right wrist.*

Hose Hang-Up

FOLLOWING engine shutdown after a barricade landing aboard the carrier, the pilot of an A-4 was unable to egress from the cockpit to the ladder because of his anti-G suit connection. Some time during the flight it had become disconnected and had lodged between the seat and the console on the port side. Without power to the aircraft to raise the seat to free the metal male connection it was necessary for him to cut the hose to free himself from the cockpit.

Perhaps this was an isolated case, the report of the aircraft accident board states, but the implications are clear. In a situation wherein immediate escape is necessary (such as fire on deck or ditching) such a hindrance might prove fatal. The necessity for ensuring a good hose-to-console anti-G suit connection prior to and during each hop should be stressed to all pilots.

On Medication

THE hazards of a driver operating motorized equipment while on medication are evident in the following accident.

At sick call a corporal complaining of stomach trouble and "bad nerves" was given three prescriptions including a tranquilizer. Two hours later he took his first medicine. He told his NCO in charge that he was on a tranquilizer and that the doctor had told him to "take it easy that afternoon." Since he was not given a light duty or a no duty chit, he was told to man the sweeper.

While he was operating the sweeper in front of aircraft parked on the flight line, it took off 3½ inches of radome from an F-8B. The radome scraped a strip of paint 7 inches wide the entire length of the sweeper except for the hood and cab area. The corporal was unaware that he had damaged the aircraft until squadron personnel stopped him and told him.

The Flight Surgeon recommended.

- That anyone on sedative-tranquilizing drugs or any other drugs which interfere with alertness and coordination should be temporarily removed from such jobs as driving, working around machinery, etc. on recommendation of the medical officer.
- That non-medical personnel in responsible positions use *common sense* and good judgment in assigning duties when it is apparent or suggested that an individual should temporarily not be doing the proposed assignment.

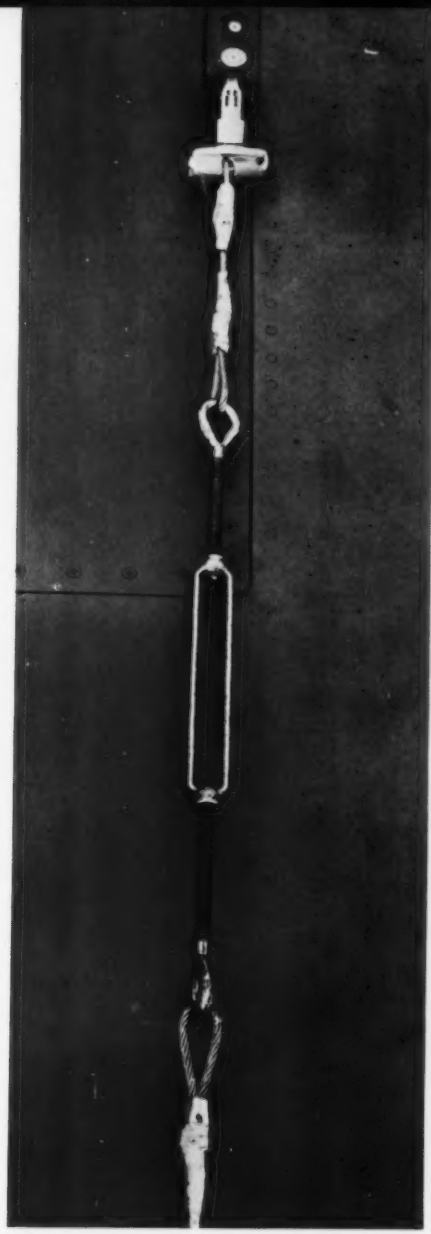
There have been numerous instances in which personnel have suffered serious injuries as a result of falling from aircraft wings. Although a number of safety devices and procedures have been designed to minimize the hazards of working atop wings, injuries and near misses caused by slips and falls continue to be reported. Some of these accidents occur because safety equipment is not used or is used improperly, but occasionally accepted safety practices prove to be inadequate. Such an instance arose recently when a man fell from the wing of a P-2 aircraft while using standard safety equipment and procedures, i. e., two lines attached to a safety harness and held taut by men on the ground stationed fore and aft of the wing. The accident occurred when the line tender was distracted momentarily at the same instant that the wing walker slipped.

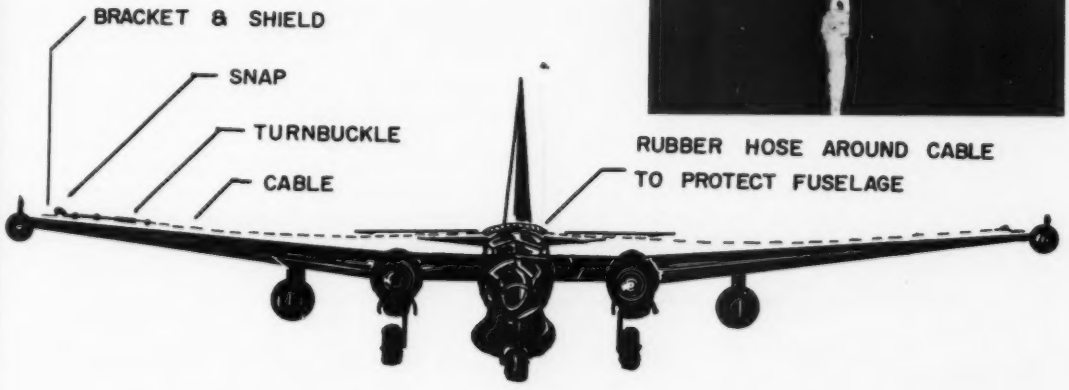
To avoid a recurrence, squadron personnel designed the wing safety line device described below. While some P-2 activities employ safety lines of this type, their employment is not standard practice throughout the fleet. As a result of its practice, this squadron believes that the safety line provides the best protection to the worker and therefore should be adopted for standard use.

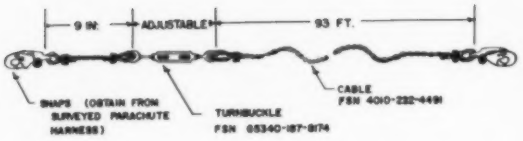
In addition to increased safety, the wing safety line offers the following advantages:

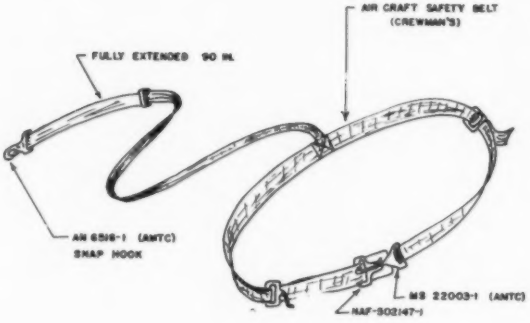
Safety Lines

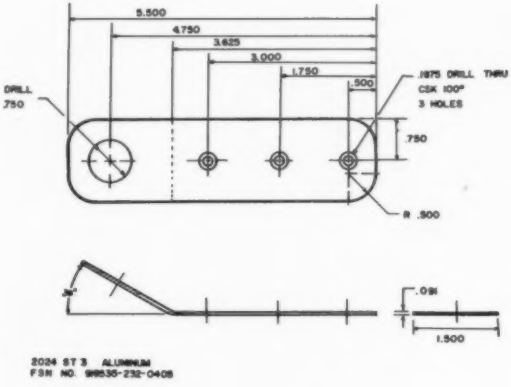
Patrol Squadron TWO

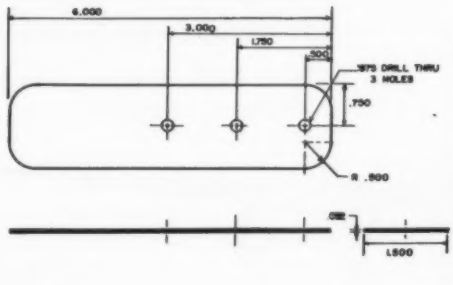












- Freedom of movement fore and aft as well as laterally.
- Saving in manpower since no full-time line tenders are required. (In high wings or when the wing is wet or icy, it is desirable to retain the line tenders until the safety line is rigged.)
- Permits several workers on the wing at one time.

The safety line is rigged from wingtip to wingtip and consists of three main parts:

Safety line assembly. This assembly consists of a $\frac{5}{32}$" wire cable with a parachute snap at each end and turnbuckle to allow adjustments of tension on the line. A rubber hose or other buffer material should be placed over the center portion of the cable to avoid chafing the fuselage.

Safety belt assembly. This consists of a standard aircraft lap belt with a 90-inch adjustable nylon webbing lanyard sewn or riveted to the rear of the belt. A snap hook attached to the free end of the lanyard permits freedom of movement over the full length of the aircraft wing.

Wing bracket and shield. These can be manufactured locally from 2024 ST 3 aluminum. They are permanently secured to each wingtip at station 573 with screws inserted in existing holes of the fuel plumbing access door.

The complete device can be manufactured and assembled in four manhours at a total cost of $20 (considerably less if surveyed parachute harnesses and aircraft control cable are available).

After testing the strength and operation of the safety line thoroughly, first with weights and then with personnel, this device has been employed regularly for several months. It has been found satisfactory in all respects.

Safety lines described here were designed by Chief Structural Mechanic A. W. Schaeffer and P. R. Haskell, ABH1. Spec drawings by B. B. Cockrell, Jr., AMH1. Commander Fleet Air Whidbey, in endorsing this safety device cited the initiative display by PatRon TWO in its development. Commander Naval Air Force, U. S. Pacific Fleet forwarded the proposal citing the desirability of such a device as well as its simplicity and economical manufacture.

If your activity has solved a safety problem, please share it through APPROACH.

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PARABLE *Flight Line Overtime*

AND so it came to pass that in the 13th hour of the sun, in the land of the burning concrete, that the weary lay down their wrenches and lifted their voices in prayer toward the center cubicle from which all things begin.

And as the benders of the wrenches assemble in prayer, there ariseth great clamor, weeping and

lamentation; for they are heavy of eye, sore of feet, and weary of limb, for their toils have indeed been great. Surely, now, the Chief of Maintenance will give them rest. Then there is a great hush, for the hallowed portals of the center cubicle open and the Chief of Maintenance and his disciples come forth from their sanctuary and don their dark glasses and sun helmets; for lo, the sun is painful even unto them.

And a disciple steps forth and speaketh unto them of the 70 percent on the morrow and calleth on the benders of the wrenches to give freely and cheerfully of their labours; for the 70 percent effort surpasseth all things.

And another disciple cometh forth and speaketh in riddles of reports and analysis and of man-hours and of the glories of the system.

Then there is a great hush, for the Chief himself cometh forth to speak and he sayeth unto them, "Return ye to your labours, and, if the 70 percent be a great success, surely on the second Sunday of next week, ye shall have an 'hour of respite.'"

And one of the braver of the benders of the wrenches ariseth and maketh great harangue, and speaketh to the Chief saying, "Surely thou hast not so soon forgotten thy promise that on this day thou wouldst give us rest?"

And the Chief became exceedingly wroth and speakest in a thunderous voice, and the benders of the wrenches whimper and quake in their tracks for their fear is great. For the Chief sayeth, "Be thou then accursed, for thine ingratitude is great." And the benders of the wrenches whimper and murmur. "Yea, verily, we are of the accursed."

And the Chief speaketh yet again, "Hear my judgement, for ye are of the unfortunate. Ye shall henceforth maintain twice as many aircraft. But, we shall give unto you no cotter pins and ye shall forage through the land for new parts. And I shall send my inspectors to work mischief among thy people and to harass and spy upon thee. And great will be the plagues that shall visit upon thee. Yea, verily, thou shalt come to know the torments of the time cards."

And the benders of the wrenches rend their clothing and sit in ashes and plead for mercy, but the Chief is ever unforgiving.

Then the Chief, and his disciples turn away from their place and go thence into the places under which rivers of spirits flow and abide therein during the darken hours.

And the benders of the wrenches return to their tasks and revile the flapped-winged monsters and one sayeth, "Yea, verily, hell is our heritage and we must abide therein."—*2nd MAW* ●

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101

Maintenance Goofs

A recap of maintenance goofs occurring during the quarter, April, May and June of '63 reflects an upward trend in the number of accidents over the previous quarter. — 3 people killed, 10 injured, damage losses up nearly $800,000 totaling $1,906,390. Fatalities up three-fold, injuries doubled and the number of errors 101 compared to 69.

For a change of pace we're posting the briefs by ratings primarily concerned. Remember, we said *concerned* not involved. In some cases more than a single rating may be concerned. We recommend you read 'em all; if the shoe fits, please wear it. You will note the aviation structural mechanic (AM) is tagged for a share appearing greater in proportion than other ratings. Don't let the number deceive you. Keep in mind that the AM rating takes in specialists AMH (hydraulics men) and AME (escape system mechanics). Furthermore, their area of responsibility takes in more of the airframe, and it follows that there are more of them assigned to some squadrons than any other rating.

Now that you've got the picture ratingwise, eyeball the briefs with a view of possibly avoiding the traps that keep recurring and perhaps a few new to you.

A-4: Two unqualified ordnancemen armed an Aero-6 rocket pack which resulted in two rockets being fired into a hillside.

A-4: During a continuity check an Aero-8A rack was unintentionally ejected causing a serious injury; safety pin was found only partially inserted.

A-4: Murphy's Law – Cross-connected electrical cannon plug leads resulted in inflight loss of the X-4B and Aero 7A racks.

A-4: Murphy's Law – Cross-connecting the primary and emergency circuits resulted in loss of X-4A bomb rack – D damage.

A-4: An attempt to remove 20mm ammunition by cycling it through the gun resulted in minor injury and limited damage.

A-4: An attempt to unload an Aero-8A container by catching the practice bombs in foul weather jackets resulted in B injury.

EF-10B: The crew unfamiliar with a Mk-51 bomb rack, damaged the release lever which caused loss of fuel tank in flight.

F-4: Crew, unfamiliar with Aero-7A rack, failed to visually check sear position – missile lost in flight.

F-8: The lack of a cotter pin or lockwire in a nut and bolt resulted in the loss of a tow banner adaptor bar.

F-8: The use of a bolt too short to accept a cotter pin resulted in loss of a tow banner radar reflector.

A-4: A stray anchor nut lodged behind the armament panel short circuited the jettison switch and resulted in the loss of an external fuel tank.

A-4: Two instances – Two engines required replacement as a result of failures to check/replenish the oil supply.

A-4: Improper installation/torque of rear main bearing support bolts and tab lock washers caused engine failure and strike damage.

A-4: A missing cotter pin in the throttle linkage after fuel control change resulted in an emergency landing.

A-4: Improper interchange of parts and cross-threading engine oil tee fitting resulted in D damage.

F-1E: During turnup with the tail section removed a fire developed after fuel was allowed to vent onto the engine – B damage.

F-3: Failure to reinstall an adel clamp permitted movement of the electronic package and severing of the common groundwire for fuel boost power control relays causing inflight flameout.

F-4: Installation of an improper type clamp on the main fuel pump filter resulted in loss of fuel and flameout during landing rollout.

F-4: Failing to install cotter pins in the engine throttle control linkage resulted in loss of control.

F-8: Installation of a new O-ring seal over a used one in the fuel overboard vent line coupling caused E damage.

F-8: Failure to install lockwire on the afterburner sensing line nut resulting in a fire warning light, forced landing – E damage.

F-11: Failure to tighten and lockwire the fuel vent tube coupling resulted in a fire – D damage.

T-34: After the carburetor alternate air intake door was replaced an extra door was left adrift inside the intake duct and caused engine failure – D damage.

T-28: Inadequate tightening of engine fuel

pump line nut resulted in fire – E damage.

UH-2A: Stator actuator linkage was not properly secured due to either the reuse of a worn self-locking nut or absence of a cotter pin – D damage.

UH-34 Improper internal timing adjustments and lack of lubrication after overhaul caused magneto failure – C damage.

SH-3A: Engine access door came open in flight due to improper security/inspection.

F-3: Failing to secure transmissions from a WRT-35 antenna while loading a flare in a delmar target resulted in C injury.

F-9: Failure to properly trouble shoot a malfunctioning fuel quantity system during a major inspection contributed to an inflight flameout – Fatal/Strike.

F-11: Two improperly installed master fuel switch leads resulted in a flameout and aborted flight.

F-11: Improper assembly of wires in cannon plug resulted in an inflight flameout.

C-54: After an inverter was removed and no warning placard posted, an exposed lead damaged the compartment when power was applied.

A-5: Application of landing gear grease vice aircraft and instrument grease on flight control linkages resulted in frozen controls at altitude.

A-4: Lack of adequate lubrication on the canopy bungee alignment bearing caused the piston to break – E damage.

A-4: Crew failed to properly maintain landing door system and failed to comply with HIR.

A-4: Failure to properly service the tailhook holddown cylinder resulted in E damage.

A-4: Two instances – Crews neglected to follow the HMI, overtorqued the swaybrace holddown bolts on two aircraft. Two fuel tanks lost at sea during landings.

A-4: Crew overfilled nose strut with fluid and retracted the rigid strut causing D damage.

A-4: A hydraulic fitting leaked as a result of overtorque which resulted in loss of braking action for the inflight refueling drogue. Hose and drogue lost in flight.

A-4: Improper assembly of a flareless tube and fitting and failure to pressure test the line prior to turnup resulted in fire – C damage.

A-4: After improperly positioning a tail section on a workstand a crewman climbed upon it causing it to tip backwards – E damage.

A-4: Inadequate lubrication on a bolt in the landing gear door control system caused E damage.

A-4: Failure to lubricate and fully lock bomb rack resulted in loss of fuel tank – D damage.

A-4: An attempt to raise the nose section on improperly positioned jack resulted in E damage.

F-1E: Pilot had to be rescued from burning

aircraft because crews failed to properly inspect the battery and improperly rigged the canopy emergency release handle to the initiator pins.

F-3: Failure to report that air and hydraulic fluid had been bled from a strut rather than being properly reserviced resulted in E damage.

F-4: After the tire gage failed, tires were inflated by sight until the nose tire failed – C damage. (Tires on six aircraft improperly inflated.)

F-4: Installation of the forward canopy safety strut upside down and failure to install the safety pin caused damage to the seat and canopy.

F-4: Failure to remove the weight from the landing gear while adjusting a hastily installed scissor switch resulted in C damage.

F-8: UHT was damaged during preflight check; crew failed to ensure that sufficient clearance was available.

F-8: Masking tape covering the static air vent caused overpressurization of the cockpit and failure of the port windscreen.

F-8: After refilling the oxygen system the handle was not properly stowed. This permitted the door to press against the handle and caused a loss of oxygen. Pilot aborted flight after experiencing hypoxia.

F-8: Overpressurizing the nose gear strut and an inadequate amount of hydraulic fluid were primary causes for a cracked bulkhead – D damage.

F-8: An improperly assembled brake accumulator exploded and caused E damage.

F-8: Failure to remove a bolt and clamp from the wing fold area prior to spreading the wing caused D damage.

F-8: Nose gear collapsed during CVA arrestment due to 125 vice 265 psi – D damage.

F-8: Failure to remove the tail section to investigate the reason for an inflight fire warning light resulted in D damage.

F-8: A "short cut" to save time by manually depressing the wingfold sequence valve and quickly cycling the handle with the jury struts installed resulted in E damage.

F-11: The ejection seat was inadvertently fired on the ground. The safety pin had not been installed. No injury – D damage.

P-2: After bypassing the heater ram air pressure switch for the anti-icing system an accumulation of fuel was ignited causing an explosion in the tail section – D damage.

P-2: An attempt to replace a nose jury strut bolt without using a jack resulted in the gear collapsing and E damage.

P-2: Crew violated safety precautions by failing to use a vapor-proof light which caused pressurized fuel to become ignited through contact with an unprotected light bulb – E damage.

P-2: Failure to remove a safety jack from under the tail section before lowering the aircraft resulted in E damage.

C-54: Inadequate lubrication of the nose strut and piston seals caused a gear malfunction – E damage.

S-2/C-1: Supervisor failed to provide safety observers while spreading the wings; a crewman's hand was caught and seriously crushed.

S-2/C-1: Substantial damage resulted when the wing lock pins were prematurely actuated and were not observed by maintenance personnel.

S-2/C-1: After replacing a vacuum pump and failing to retighten the heater fuel line fitting, an inflight fire resulted – E damage.

S-2/C-1: Improper installation of a wing sequence valve and a lack of observers while cycling the wing resulted in D damage.

T-34: During assembly the landing gear retract actuator and motor pinion gears were not fully engaged and resulted in system failure – D damage.

T-28: After 9 previous brake discrepancies the master brake cylinder was found to have an internal leak – E damage.

C-121: Using a hydraulic test stand with a faulty pressure gage resulted in overpressurization/explosion of brake accumulator – D damage.

C-121: Failure to follow HMI resulted in the aileron boost actuating cylinder cam being improperly indexed with the relief valve lever. Flight control difficulty was experienced during flight.

UH-2A: Failure to install a cotter pin or a nut and cotter pin on a bolt connecting the cyclic con-

trol rod to the yoke resulted in loss of control. Overhaul damage, two fatalities and two minor injuries.

H-43: External cargo lost in flight due to improper maintenance and failure to positively lock hook.

H-34: Crew failed to secure/inspect transmission panel fasteners.

H-34: Murphy's Law – Crew cross-connecting hydraulic lines to the left lateral servo – D damage.

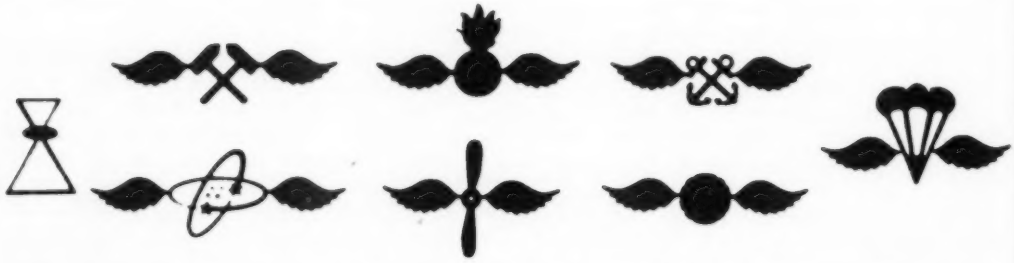
H-34: The reuse/overtorque of a hydraulic adaptor fitting resulted in a forced landing.

H-37: Use of masking tape to hold pylon lockpin indicator in the safe position and failure to lock the pins resulted in E damage.

SH-3A: Crew improperly rigged sonar boom over-center lock assembly – E damage.

F-4 Failure to install the centerline tank safety pin cover plate and to properly torque the engine bleed air duct to the keel coupling resulted in loss of a fuel tank.

HU-16: A Mk-VII liferaft was inflated in the storage compartment while the CO_2 cable was being disconnected.



A-4: Two instances – Crew removed the strut actuating cylinder pins and allowed the nose gear to collapse – E damage.

A-4: Failure to remove the gust locks resulted in aileron and flap damage.

A-4: An improperly secured radar scope resulted in temporary loss of control during a catapult launch.

F-1E: Failure to install safety pins allowed canopy initiator to be fired inadvertently while the console fairing was being removed.

F-4: Two instances – Open-end wrench left in the intake duct caused engine FOD.

F-8: Loss of an improperly secured port equipment door resulted in E damage.

F-11: A stray hardware item left in the landing gear resulted in E damage.

T-33: Failure to properly install/inspect a wing fuel drop tank cap resulted in D damage.

P-2: A crewman was seriously injured when he was blown from the ramp seawall by propeller wash.

A-1: A screwdriver left on the wing stub was ingested into an engine and caused FOD – E damage.

P-5: Failure to wear a safety harness while attempting to remove ice from top of a wing resulted in C injury.

P-5: Engine cowling was lost in flight as a result of a failing to repair and secure defective Dzus fasteners.

P-5: Improper handling of a loaded Very pistol resulted in a cockpit fire – E damage.

S-2/C-1: A screwdriver in the aileron bellcrank assembly jammed yoke during pre-takeoff check.

S-2/C-1: Crew failed to electrically cycle and lock the MAD boom prior to launch – E damage.

E-1B: Failure to properly install/inspect fuel cap resulted in loss of cap and fuel.

At this point you have probably deduced that without exception all of these maintenance goofs are the preventable kind. No tricks, no secrets, nothing mysterious about their causes. Therefore, it is logical to assume maintenance error elimination (MEE) is possible through a balanced program of motivation, good training, good workmanship, following instructions in HMI and HRI, good quality control and good supervision – not always superior work and not without its problems, but always sufficiently pursued, sufficiently supervised and sufficiently stimulated by command attention that good results follow. If a man knows what to do, and he does it right, the system has to work. ***Try it.***

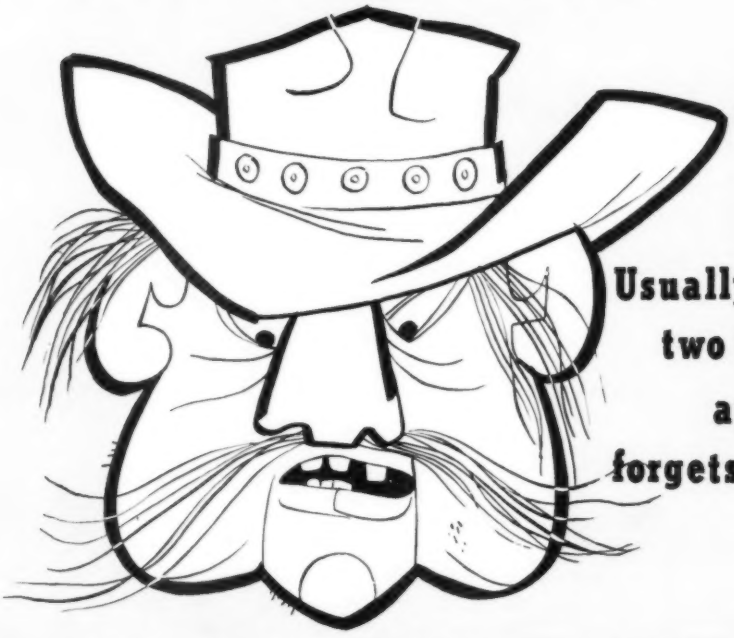
Editor's Note: We plan to publish maintenance errors in APPROACH on a quarterly basis hereafter instead of annually. If you have any ideas or suggestions as to preference as to format, or manner of presentation, please let us know – these are always welcomed – remember APPROACH is about, by and for you.

You and MEE

WANTED

FOR CORRECTION

Changes a part faster than anyone.



Usually crosses two lines and forgets to test.

'Quick Draw' MURPHY

REWARD

BETTER MAINTENANCE and SAFER FLYING

"If an aircraft part can be installed improperly — someone will install it that way."

Don't Get Your Lines Crossed

MAYBE it never happened to you but crossing of return and pressure lines, reversing of cables, switching of cannon plugs have created unpleasant memories for others.

Recently, flex lines connecting the metering valve for the stabilizer trim upper hydraulic motor were disconnected at the bulkhead bracket during hydraulic system flushing and then crossed on reinstallation. When pressure was applied to the return side of the system, things happened —all bad.

With the pressure and return lines crossed, the metering valve was unable to perform its function. Consequently the upper motor drove uncontrolled until the main jackscrew stops were contacted. Severe damage to the stabilizer trim mechanism resulted.

This story probably has a moral. Don't get your lines crossed. Furthermore, if in doubt, don't do it. The matter of minutes required to positively assure correct cannon plug, cable, and tubing connections is time well spent.—*Boeing Service News*

Crossed-Up

AN F-3 (F3H) accident involved an aborted takeoff due to ZERO airspeed indication. Alfa damage was the result of a fire following wheel failure. The lack of airspeed indication on attempted takeoff was due to the *reversal* of the airspeed indicator *pitot* and *static* lines. Quality Control inspectors should be rebriefed that the Murphy exists.

Cross-Connection of Two Like Connectors

In the A4E aircraft, the cannon plugs on the interior-light console and the miscellaneous switch panel, which is immediately aft of interior-light console, are interchangeable. They are identical in size and pin arrangement.

When these two connectors were crossed, the integral lighting of the below listed indicators were burned out.

Angle of attack indicator, LQOX quantity indication, AN/ASN-19A indicator, RPM indicator, EGT indicator, fuel quantity indicator, fuel flow indicator, turn and bank indicator, oil pressure indicator, labs timer, standby attitude gyro indicator.

I suggest that a different connector be installed on one of the two consoles.—*AEC Mouse*

Lines Crossed

ON AN operational turn-up of an A-4C following a field team rework, Project Mate, it was noted the Fuel Flow Indicator PN 754835 read a constant 2000 lbs./hr., and no oil pressure reading on the Oil Pressure Gage PN SR94D.

Upon investigation, it was found that the oil pressure lead had been attached to the Fuel Flow Indicator, and the Oil Pressure Gage, (Nickle Gage) completely disconnected.

A-4 operators are hereby warned that although the wiring is clearly marked there is still a condition existing whereby two identical plugs for instruments are in close proximity. — W. A. YANNAYON, *Quality Control CPO*, VA-216

Fuel Gage Wires Crossed

AN RF-8A landed at a shore station after launch from a CVA. The pilot's fuel quantity gages indicated that he was unable to transfer fuel from his transfer fuel system.

When he informed the CVA of his problem, he was instructed to dump his transfer fuel and land on the ship. Upon actuation of fuel dump he noted a decrease of 200 lbs. main fuel quantity indication. He secured dumping and requested bingo.

The pilot noted extremely hot brakes upon arrival at the shore station, and the fire department was called. The hot brakes were caused by landing over specified weight.

Investigation revealed that two cable connectors in the rear of the fuel quantity gages were reversed. This runs the transfer gage to pegged position and makes the main gage read transfer fuel quantity. The transfer gage remains pegged regardless where fuel level is in MAIN. This pilot landed with 5000 lbs. indicated in transfer and 1100 lbs indicated in main cells. He had an actual fuel load of 7300 lbs. Although the system was operating normally, the gages were not indicating correctly.

This Murphy was caused by two things. First, both connectors were the same size and interchangeable. Second, (and more importantly) electricians cut corners by connecting these cables crossed up intentionally for the purpose of eliminating the quantity gages when trouble shooting fuel indication discrepancies.

Cables should be color coded as an interim fix and later, size changed to eliminate any chance of connection to wrong terminals.— R. P. JUNKER, ADJC, VFP-63, NAS MIRAMAR

Want your safety suggestion read by nearly a quarter of a million people in naval aviation? Send your constructive suggestions to APPROACH.

Letters

Survival Knife

West Hartford, Conn.—In a recent issue of APPROACH, you had an article on the proper place to wear the Navy survival knife. I would like a copy of this article. This is of interest to me as a knife collector. (I collect daggers, bayonets and survival knives.)

Since first reading this article, I have wondered if any research had been done by you in the history and development of survival knives . . .

N. C. HEILMAN
FIELD ENGINEER
CHANDLER EVANS CORP.

• A copy of the January 1963 APPROACH in which the knife article you refer to appears is on its way. We do not have any data on the history and development of survival knives. Perhaps you could contact the Infantry Combat Section of the Army or the Smithsonian Institution for this information.

Appreciates MUGS Training

Iwakuni, Japan—"MUGS Training" (Nov '63) caught my attention. Well Done! . . . Hope that shore station commands and ships take advantage of this valuable information, the new program of standardization and push it — the need is urgent.

. . . Proper knowledge and usage of yellow equipment one is operating will greatly reduce the cost of maintaining the equipment and increase its reliability for a longer period.

Further, effective use of this training will greatly reduce personnel injuries, prevent damage to aircraft and yellow equipment.

RUSSELL W. WALLACE, AN
VP-22 LINE DIVISION

• Concur wholeheartedly. Hope all other linemen and operators share your (and our) viewpoints.

Nav Packet

Washington, D. C.—This detachment, with the help of S/Sgt W. J. Moss, designed and is currently using this navigation flight packet. The packets are maintained in the Operations Office and publications are replaced as new editions are received. During drill week ends the Marine Reserve pilots check out, use during the drill and check in the flight packets at the completion of flight operations.

We believe this system serves two useful purposes:

a. From the safety angle it ensures up to date charts and publications in the cockpit when they are needed.

b. It reduces the number of publications required.

For a job plan (instructions) providing the correct sequence and technique for constructing packet, write Commander, Naval Aviation Safety Center, Attention: Safety Education Department.

Naval Air Station
Norfolk, Va.
23511

Confusion in Color Codes

Korea — I notice a discrepancy in the July issue and would appreciate clarification.

Much work has been done in the aircraft control field, with respect to the placement and functioning of handles and gadgets available to the pilot. We have arrived at standards which tend toward uniformity; for example, with respect to throttle, mixture controls, and various related gadgets, a "push" generally is the equivalent of "go" while a "pull" means "stop" or "slow down." Similarly, rudder controls, sticks, wheels, flaps, and trim tabs all have uniform control directions — or should have!

But something seems to violate this standardization concept in another, but no less vital area. I refer to the article on page 42. Here we learn that a "dirty" tank has one stripe, while a "clean" tank has two stripes. Well and Good.

Now, look at page 38. Here are two pictures of another kind of tank. It clearly has two stripes. But, if we are to believe the lettering partially visible on the side of the tanks, it seems to say that *this* particular type of gas is "dirty" — "oil pumped."

The tanks on page 42 are nitrogen. The tanks on page 38 are compressed air. There may be a lot about pressure tanks that I know nothing about. But that's my point! The identification *system*, if it is to be a uniform, reliable system, must above all be clear and intelligible to the uninitiated, with a very minimum of complications.

The idea of one stripe: "dirty"; two stripes: "clean" makes sense. I filed it away for future reference — until I took a good look at page 38! Now I'm really confused. What happened?

DON C. MAIER, AVIONICS ADVISOR
FIELD MAINTENANCE DIVISION
4TH SIGNAL BATTALION, APO 20
SAN FRANCISCO, CALIF.

● Mil-Std-101A of 16 March 1954 is the directive which "Standardizes" color coding of compressed gasses. The theme you mention holds true for all Oil/Water pumped gasses except air and neon. Your suggestion has been forwarded to the Standardization Division, Office of the Assistant Secretary of Defense for consideration.

Instrument Plate Holder

FPO—Here's a P-2 drivers' simple solution for the question: *Where do I put my approach plate?*

For any all-weather pilot it is standard practice to have available approach plates in the cockpit during departure and arrival. Even in fair weather this practice provides useful information such as field elevation, airport layout, radio frequencies, etc. In multi-engine aircraft the approach plate usually ends up lying loose in the cockpit either on the center pedestal or wedged behind some protruding clip defying gravity, aircraft vibrations and transient air currents. Normally the plate is completely out of the pilot's instrument scan, not illuminated, and placed where the copilot cannot see or reach it. Consequently, those items not absolutely committed to memory are lost during the approach.

In the P-2H a simple and inexpensive solution is at hand. By installing a hook in the instrument glare shield above the pilot's DRT all necessary approach plates held together by a binder clip are neatly hung under the DRT light in full view of both the pilot and the copilot (see picture). The illuminated plate can now be included in the pilot's instrument scan and the copilot can conveniently change plates as rapidly as necessary. Upon completion of a flight all loose SID plates and approach plate books are held together for storage by the binder clip.

D. W. MATHEWS, LCDR

Operation "Ram"

NAS, Willow Grove – Sheep are recruited to keep grass cut at the aviation fuel farm. With less money for maintenance of grounds, it took ingenuity to figure out a safe and free method of getting the grass cut before it becomes a fire hazard.

PIO

Re Underwater Escape

FPO, San Francisco—It is requested that I be forwarded a copy of the October 1960 and May 1962 issues of APPROACH, and any other information on Underwater Escape and Ejection from jet aircraft.

ENS. L. W. BRANCHFLOWER,
VF-193 SURVIVAL OFFICER

● In answer to your request for information on underwater escape and ejection from jet aircraft we are forwarding copies of the July 1960 Approach (p. 28, "Underwater Escape from F8U"), the October 1961 Approach (p. 30, "Underwater Escape from F4D"), and January 1963 Approach (p. 27, "Prospects of Underwater Escape"), and Martin-Baker Review No. 8 from which the latter article was reprinted. The October 1960 Approach and the May 1962 Approach containing the ACEL-authored article "Escape from Sinking Aircraft," which you requested, are also on their way.

Perhaps you could obtain additional information directly from the Aerospace Crew Equipment Laboratory.

Pararaft Lanyard Hook-Up

FPO, San Francisco – Reference your article "Sir Vival" appearing in the September 1963 APPROACH, under the heading of Rocket Jet Fittings appears: ". . . over water release the lower left fitting during parachute descent so the seat pack will swing down around to your right for access to your pararaft lanyard." Again, in this same issue in the article "Hostile River" appears this same recommended procedure. *Question:* Is disconnecting the port (we're seagoing sailors) fitting really the best procedure?

The accompanying photograph illustrates a requirement for about an additional six inch extension to the average pilot's reach. The weight of the seat pan and pararaft cause the lanyard to drop about that much lower. Through squadron training using our handy-dandy parachute suspension trainer, we have found that access to the lanyard is greatly facilitated by reaching for the lanyard (preferably with gloves off) and connecting to the torso harness prior to disconnecting the lower left rocket jet. Pilots simulating a broken right arm were able to reach the lanyard using this procedure.

Perhaps, through our experience, other pilots may wish to reconsider this recommendation.

LT D. A. IVERSON
AVIATION EQUIPMENT OFFICER
ATKRON 155

● The Safety Center can find nothing in writing that says you can't do it your way. In fact, the dialog of the Parachute Landing Technique movie (MN-9299B) seems to endorse your method of attaching the pararaft lanyard to your torso harness, then opening the lower left rocket jet fitting. We understand at the present time tests are being conducted and studied at the Naval Parachute Facility to determine accepted methods of parachute landing techniques. The Safety Center has requested information from BuWeps on current developments standardizing pararaft lanyard hook up during parachute descent. When this info is received, it will be published in NASC publications.

approach

NavWeps 00-75-510 VOL. 9 NO 8

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

Flight Operations

1 Helo on the Rocks
3 Disquieting Nav Hop
4 Icing Incident
6 Low State
7 What Would You Do
8 Come Fishing with ME
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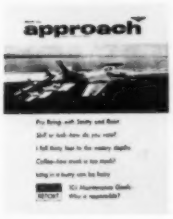
Flying, Reading and Writing



Since becoming Secretary-Treasurer and Editor of the U. S. Naval Institute, I have felt a growing amount of concern over the lack of participation in the affairs of the Naval Institute by naval aviators, particularly those in the more junior ranks. . . .

As a naval aviator, I am aware that in the magazines APPROACH and *Naval Aviation News*, naval and Marine Corps aviators have two excellent vehicles for the exchange and dissemination of information and ideas vital to the practicing aviator. The young commanding officer of an F4H who picks up his issue of the *Proceedings* before he has read both APPROACH and *Naval Aviation News* from cover to cover is not tending to his knitting. I want to make the point, however, that there is a place in the life of a naval aviator for the *Proceedings*.

As a reader of the *Proceedings*, the young aviator permits the Naval Institute to help him broaden his professional knowledge in preparation for the years ahead in which he will be detailed to billets of increasing responsibility both in and out of operational naval aviation. The pinnacles of achievement in the career of a naval aviator are command of a squadron, command of an air group, and command of an aircraft carrier. But before, between, and beyond these pinnacles, the aviator must carry out the non-flying duties of his naval career at an outstanding level of performance to ensure reaching the next pinnacle. In the articles selected for publication and in the departments such as Comment and Discussion and Professional Notes, the Naval Institute tries to provide to the intensely busy young aviator several hours a month of professionally broadening information and ideas.

The other side of the participation coin reveals that naval aviators are not taking advantage of the forum offered by the *Proceedings* to disseminate ideas and information on aviation subjects of mutual interest and concern to their non-aviation team mates. Take the broad and overwhelming important field of ASW as a case in point. Destroyermen and submariners want and need to keep themselves up to date on ASW aviation. The perspective which the aviator members of the ASW team can give to shipboard operations can be most useful.

Or, consider the fact that any ship may suddenly become involved in an SAR operation, the object of which may be a wet naval aviator. The more the people in that ship know about naval aviation, the better off the downed pilot will be. The *Proceedings* can be one source of naval aviation information if the aviators are willing to make it so.

The Secretary-Treasurer urges all naval aviators, junior and senior, to participate in the Naval Institute. If we are not now meeting your needs, tell us how we can better serve you—and help us do it.—*U. S. Naval Institute "Proceedings"*

LIFT and DRAG

IDEA

It May Be a Small Idea But It Can Carry a Big Punch

You have 'em; Approach needs 'em. Ideas, brother, and articles, too. Write out your safety suggestion or article and pass it along to the Editor, APPROACH, NASC, NAS Norfolk, Va. And bear in mind that it will be presented to a select reading audience of one quarter of a million people. You might prevent one of them from having an accident.